

ONTARIO TEACHERS' MANUALS

GEOGRAPHY

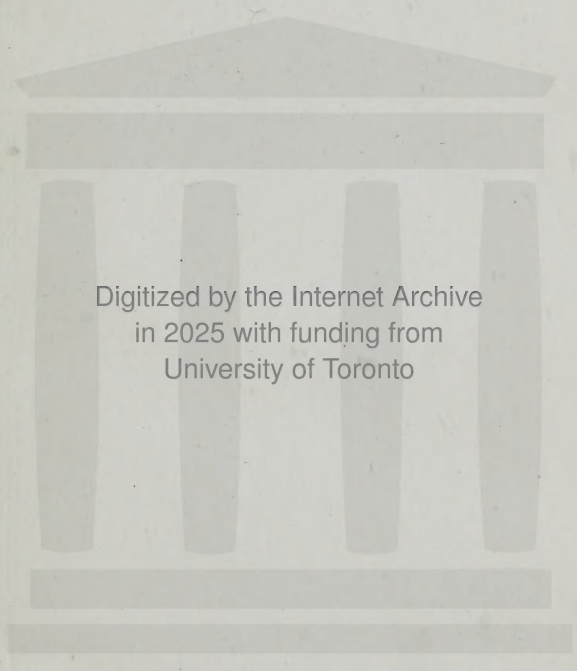


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THE RYERSON PRESS

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GEOGRAPHY

ELEMENTARY SCHOOLS

COURSE OF STUDY

FORM I

Simple observational work in connection with:

(a) Weather, seasons, sun, moon.

(b) Activities of the home and neighbourhood.

(c) Plant and animal life; habits and uses of a few domestic and wild animals and birds; recognition of a few common trees, flowers, fruits.

FORM II

Simple land and water forms; representation by modelling and drawing.

Local industries and products; local marketing.

The local township, county, city.

The earth as a whole: continents, oceans, their relative position and size.

Observations of the plant and animal life of the locality; identification of common birds, insects, flowers, weeds, trees.

Supplementary reading: "Child Life in Other Lands."

FORM III

Junior Grade:

Introductory:

Men who live by hunting and fishing, by lumbering and mining.

How man obtains food from the soil.

Raw materials, manufacture, transportation, and trade.

Land forms.

The earth as a whole: its form, rotation, poles, equator.

Climate and life.

Outline study of North America; surface, drainage, coastal waters, climate, resources, countries.

Canada:

Position, extent, people.

Physical divisions: characteristics of each.

Climate.

Chief natural resources: industries.

Chief rail and water routes.

A few of the chief exports and imports.

Provinces and territories: relative position and comparative size.

Simple map drawing.

Supplementary Reading.

Senior Grade:

Ontario: position, extent, surface, climate, resources, industries, exports, imports, trade centres, transportation routes.

Outline study of the other Provinces and Newfoundland.

British Empire in general: component parts, peoples, chief trade routes.

Simple map drawing.

Supplementary Reading.

FORM IV

Junior Grade:

Latitude and longitude.

Outline study of South America and Europe: surface, drainage, coastal waters, important countries.

The British Isles: extent, surface, climate, industries, exports, imports, chief trade routes, chief cities.

Detailed study of Australia and New Zealand.

Outline study of the United States: surface, drainage, climate, resources, chief cities.

Map drawing and use of outline maps.

Supplementary Reading.

Senior Grade:

Variation in length of day and night: the seasons.

Winds: rainfall.

The ocean and its movements.

Factors determining climate.

Outline study of Asia and Africa: surface, drainage, coastal waters, chief countries.

Detailed study of the following parts of the British Empire: Union of South Africa, India and Ceylon, Newfoundland, British West Indies.

Outline study of the following countries: Brazil, Argentina, France, Italy, Germany, the Netherlands, Denmark, Norway and Sweden, Russia, Egypt, China, Japan.

Review of Canada, the British Isles, Australia, New Zealand, the United States.

Map drawing and use of outline maps.

Supplementary Reading.

FORM V

The study of the following, with regard to their physical features; the influence of their geographical conditions on their political, industrial, and commercial development; their principal resources, industries, and productions; their chief centres of population; the condition of the people and their forms of government.

(1) The countries of Central America, South America, Europe, and Africa.

(2) The United States, Mexico, China, and Japan.

(3) The United Kingdom; the Dominions of Canada and Australia; the Union of South Africa; India; and other important parts of the British Empire.

Map study in connection with the above countries.

The countries in (1) and (2) to be studied in outline; those in (3) in greater detail.

Books of travel and other supplementary reading from the school or public library; when practicable, exhibits of the products characteristic of the countries studied; and pictures and photographs of famous places.

GEOGRAPHY

CHAPTER I

THE MEANING AND VALUE OF GEOGRAPHY

THE STANDPOINT OF GEOGRAPHY

THE word geography is derived from two Greek roots meaning a description of the earth. The material in the older school geographies shows how closely the writers adhered to the root meaning, for their books consist of descriptions of miscellaneous things connected with the earth. The earth, however, is so complex, so many-sided, that anything like a complete description was impossible. Therefore, they selected facts that were curious, interesting, and often important, and incorporated them into text-books.

This weakness of the early geographies points to the necessity of carefully defining the limits of the subject. But since all the sciences deal with terrestrial phenomena, to give a complete description of the earth would involve writing an encyclopædic account of all the sciences. The first task, then, is to find which facts about the earth are most valuable for geography and which are of relatively little importance.

Let us consider several terrestrial objects and phenomena, and find which facts about each are of value to the geographer and which to the other scientists.

Gold claims the interest of several of the scientists. The chemist studies its composition, teaches that it can be converted into many salts, and that it can be dissolved by aqua regia. The physicist is much interested

in its malleability, which allows of its being hammered into sheets thinner than the finest paper. The geologist values the knowledge of the strata in which it is found, the possible conditions under which it was formed, and the insight it gives into the history of the earth's crust. The mineralogist examines its lustre, hardness, crystalline form, and its reactions to the blow-pipe. But in none of these facts is the geographer especially interested.

The discovery of gold in Northern Ontario led to a rush of prospectors to a part of the country that up to that time had few inhabitants. Villages sprang up like mushrooms, Timmins became rapidly one of the most important towns in Northern Ontario, a railway was rapidly laid to the gold mines; and to-day the distribution of population in that part of the province differs greatly from what it would have been if the Porcupine gold mines had not been discovered. These are some of the facts that are geographically important. Thus each investigator selects the facts about the objects of the earth that can be utilized in his particular science.

What, then, is the particular standpoint of geography? It is simply this—that geography is a study of the relation of the earth to man. It is sometimes stated in another form; namely, that geography deals with the earth as the home of man. Some geographers would broaden the field, and include under this science not merely the relation of the earth to man but to all other animals and to plants as well. But as a school subject the narrower view is more applicable in teaching.

The chemical composition of gold, the mode of formation, its hardness, and its form have had little direct influence on man, but its commercial value has caused great changes in the distribution of man, has made many people prosperous, and has led man to modify the

face of the earth by building roads, railways, villages, towns, and cities.

The botanist devotes a very small amount of space to grasses and a very large amount to mosses, because the latter are of great value in showing the relation between the lower and the higher groups of plants. To the geographer, on the other hand, such a relation is of no importance, as it has no effect on man. The grasses, scarcely mentioned by the botanist, are of more importance to the geographer than all the rest of the vegetable kingdom. They are the chief food of man and beast and make up nine-tenths of the crops raised by farmers, whether it be the wheat, oats, barley, and hay of Canada, the corn of the United States, the millet and sugar-cane of India, or the rice of China and Japan.

This definition of geography helps the teacher greatly in selecting the facts that should be taught about any region, commodity, or phenomenon. It gives him a touchstone by which he can at once distinguish between facts that are geographically important and those that are unimportant.

For example, when he is teaching a lesson on the animals of Africa, he has to decide upon the relative importance of the giraffe, rhinoceros, hippopotamus, antelope, zebra, elephant, lion, and many others. He knows at once that the most of these are of little or no geographical importance, except that each year they attract a few hunters to the continent, who contribute to the wealth of the country. The elephant is of additional importance, because many natives make a scant living by hunting him for his tusks, which furnish ivory—an important article of commerce. The most important animals, geographically, are frequently not mentioned at all.

Hundreds of thousands of square miles of that great

continent, with a soil so fertile and a climate so stimulating that two or three fat crops a year might be produced, are almost deserted wildernesses that have a density of population as low as the Sahara Desert, because the tsetse fly and the malarial mosquito make life impossible for man and beast. These virulent insects have had more to do with the distribution of population, the selection of sites for towns and cities, and the building of roads and railways than has all other animal life. Therefore, they are the animals of Africa of the greatest geographical importance.

Suppose the lesson is on the Rocky Mountains. Their mode of formation and their geological age are of little importance, because they have not affected man. But their effect on the climate of Alberta and British Columbia, their opal tops whose melting snows give a steady supply of water throughout the dry season to the rivers irrigating southern Alberta, the forests on their sides, their wild scenery, the thousands of beautiful lakes set like gems among the rocky peaks, attracting many tourists, are of paramount importance, because they have determined the occupation, the prosperity, and the enjoyment of many thousands of people.

The frowning Rockies, thrown across the path from east to west, have had the greatest influence on the prosperity of many people, as any old timer in British Columbia will affirm with vigour. The fact that across the Canadian Rockies there are low passes, such as the Kicking Horse and the Yellowhead, through which it was possible to build railways with a low grade, is of outstanding importance, since it has led to the development of British Columbia and the Prairie Provinces; and this, in turn, has caused increased prosperity in Eastern Canada.

Again, the cause of the tides has no direct influence on man, and a knowledge of it helps him little to control his environment. Many teachers concentrate their attention on these causes, and spend several lessons in an almost useless endeavour to make the difficult explanation clear. Instead, they should give the pupils a picture of the phenomena of the tides and teach their effects on shipping. In tidal harbours, such as St. John and Quebec, loading and unloading are so difficult on account of the periodic rising and falling of the tides that special docks have to be constructed.

The British rivers are small, and the water carries down great quantities of sediment. This, if it were not for the tides, would keep their mouths continually blocked with mud flats and sandbars. But twice every day the tidal current, in its rush out to sea, scours the bottom of every estuary. On account of this action, every river mouth has harbours deep enough for large ocean-going steamers. On the other hand, in the Mediterranean Sea, where there are no tides worth mentioning, every river has a delta at its mouth, and harbours are few and dangerous.

These are the facts, that, according to the definition, are important geographically; and it is to an appreciation of these phases of the subject of geography that the teachers of to-day have come.

THE VALUE OF GEOGRAPHY

This new idea of geography greatly increases its value as a school subject. With the precise definition given above, even a tyro in the teaching profession can with ease extract the geographical kernel from any topic which he has to teach. The old geography lacked unity; now the relationship of the earth to man runs as a silken

cord through all topics, binding them into a unified whole. The new value raises geography to a higher plane, and gives it a new dignity and value as a subject in the elementary curriculum.

Geography is no longer a merely descriptive subject which states facts either unrelated or very loosely connected, and which places a burden on the memory too heavy for a child to bear. The new geography is a reasoning subject, that deals with neither the earth nor man, but with the relation of one to the other. The height of the Rocky Mountains is learned only because it is a barrier to transport; the rushing of tides into estuaries only in its relationship to the making of harbours for man's convenience. Being a study of relationships, the facts taught are closely related, and the learning of them appeals to the reason as well as to the memory. The training is much more valuable than under the old method, where it was a learning of lists of names or facts. In a subject based on cause and effect, each idea has not to be memorized by itself, but one fact is connected with another in such a way that, without taxing the memory, one can deduce cause from effect or effect from cause.

But far more valuable are the relationships studied. Man is influenced largely by his environment, and geography deals with this influence. Some scholars would go so far as to state that man is wholly the result of his environment, and that by studying the geography of China, for example, the characteristics—physical, mental, and spiritual—of the Chinese can be deduced.

Though most ethnologists would not go so far, yet geographical environment has had much to do with making people what they are, as well as in determining their actions from day to day. Environment moulds the

physical structure of man. Mountaineers have broad chests and strong legs, both necessary for climbing in high altitudes. During the South African War it was found that scanning habitually the wide, treeless, rolling plains had developed in the Boers a sight so keen that they could see much farther than the British soldiers.

Geographical environment, also, slowly but surely influences the mental outlook. Although the same British stock settled in Canada, the Eastern United States, South Africa, and Australia, yet in less than two centuries the mental attitudes of the people in each district have become more or less differentiated. We speak of a people being insular, meaning that the geographic effect of living on an island moulds the mind to narrow views.

Even religious beliefs are greatly influenced by the same factors. Among desert people, for example, the place of everlasting punishment is considered to be very hot and a place where people are parched with thirst. Therefore, in order to get an insight into the peoples of the world, we must study the responses of human beings to their environment, and that is geography.*

But geography has a much more direct and economic value. All persons go through life in contact with air, water, and earth. The air holds moisture and moves according to certain laws, and so determines climate. We meet land forms and water forms at every turn. Everybody lives in the environment of roads, railways, factories, villages, towns, and cities. All of these geographical features are influencing mankind every day, and upon a clear understanding of their action much of the interest and success in life depends.

*For a full discussion of the effect of geographical environment read *Influence of Geographical Environment*, Semple. Henry Holt Co., New York

Many make their living by directly controlling these to their advantage. The farmer utilizes soil, plants, animals, and weather to bring him profit. The man who wishes to start a shop, to build a factory, or to select a farm, must understand the use of roads, railways, and waterways, before he decides where to locate.

The same factors influence even the least important decision. The newsboy on the street must consider many factors, such as the number of people passing, the transfer corners for street cars, and the proximity of other newsboys, before he selects his stand.

The chief duty of the teacher is to show the relation of these factors to man and the manner in which he responds to them. No subject presents knowledge of a more immediately practical kind, useful in so many of life's decisions.

Geography is a subject of great social value. Canada is a democracy in which all are equal citizens. The standard of government depends on the rightness of the decisions which its citizens make on all matters that come before them. Most municipal, provincial, and federal problems that have to be solved depend largely on geographic knowledge for their solution; and the person who can interpret and apply geographic processes most accurately and intelligently is the most useful citizen. Which roads in a village or township should be paved, where should the school-house be placed, which water-powers should be developed by the Hydro-Electric Commission, should the tariff be raised or lowered, is it advisable to construct canals on the St. Lawrence River deep enough to admit ocean steamers—these are all questions whose decision depends largely on a correct balancing of the social, economic, and geographic factors. Boys and girls who have been taught geography carefully

are well equipped to contribute to the solution of such problems, and, consequently, are better citizens as the result of their training in geography.

Geography as a study calls for the solution of problem after problem. In other words, the student of geography, like the student of science, is an investigator, is being constantly brought face to face with new situations, and is compelled to find how to act in strange circumstances. Such training develops initiative. Life is largely made up of facing new situations and making them contribute to one's welfare. Training in geography gives help in solving life's problems superior even to that of science in some respects, for in this subject we are dealing with the most common and intimate facts of life.

Geography shares with nature study and elementary science the honour of bringing the pupil into contact with the concrete phenomena of nature. These are the materials with which geography works; and most lesson topics should begin with observation of the conditions of the home region. Before the weather is discussed, the pupil should make records of every day for a month at least, and before the phases of the moon are explained, the phenomena are observed throughout a cycle.

Geography, in the elementary grades, is learned mainly from the concrete facts of nature in the home environment. Throughout life man is compelled to solve his problems, in the course of making his living, by dealing with these concrete things, as in the case of the farmer in raising grain or cattle, or of the sailor in struggling with wind and wave. The student of geography learns of real objects and phenomena, and should understand better how to use the powers of nature for his purposes throughout life.

In geography which is properly taught, most topics are introduced by observation of objects and processes about the home. Geography, nature study, and art are, accordingly, the most useful school subjects in training the observation. The value of this training may easily be over estimated, however, for the generally observant person is a fiction. Fortunately nobody attends to one-tenth of the objects imaged on his retina. If he did he would soon be a nervous wreck. One observes the flowers of the field and the birds of the wood, but is quite oblivious to the sights in shop windows; another notices the details of the shop windows on every street, but passes through the fields and forests with a blind eye and a deaf ear. Each notices those things in which he is interested. The number of things which a person observes is in proportion to the breadth of his interests. Hence, by broadening interests, we widen the horizon of observation.

Nevertheless, there is a valuable training in the close observation practised in nature study, art, and geography. In the first place, it teaches the pupils how to observe; the child who has had practice in observing and describing such an object as a stream, a robin, or a process, begins to measure the parts, study their shape, colour, and relation to one another, and is able to write an accurate and detailed description.

Secondly, the pupil who has had practice in observation learns to appreciate the value of such a process in reaching accurate conclusions. The ignorant person is a very inaccurate observer. Nine-tenths of the superstitions, such as those of the relation of the moon to the weather, hog-killing, and seed-planting, as well as unlucky Fridays, and unlucky numbers and dreams, would soon vanish, if people learned to observe accurately and

to appreciate the value of observation as the basis of real knowledge.

The informational value of geography for everyday life probably surpasses that of both science and history. It teaches many place names, which are needed to understand any paragraph in the daily paper as well as to carry on an intelligent conversation with a friend. The importance of knowing where our commodities come from, how they are produced, whence goods are shipped, and the character of other parts of the world is so evident that it needs no emphasis.

Every person should understand a map and know how to interpret it. This was more widely impressed on people during the Great War than ever before. Almost every newspaper that is issued contains one or more maps, and books and magazines continually use them. This is a means much used by government departments, steamship companies, railways, and financial corporations in the endeavour to give information to the public. To most people maps are useful only for giving the relative location of places. To the person who has learned in school to interpret maps fully, they reveal almost as much as to the general who directs his whole army from information obtained by studying them.

The study of geography makes not only a better citizen, but also a better, more intelligent patriot. A real patriot is one whose love of country is based on real knowledge of the history of the past and the geographical conditions of the present. He is not a boaster of the mere bigness of the area, the population of his country, the vastness of its resources, and the quantity of its wealth. Often the smallest countries contain the truest patriots. Rather, the use which is being made of resources and opportunities, whether great or small, is what arouses

the true patriot's pride or anger. The student of geography who has studied, not only the geography of his own country but that of other parts of the world as well, is better able to measure his own country in comparison with others.

The true patriot is tolerant of other nations. It has been said that most wars are due to the people of different nations not understanding one another. There is much truth in this. Geography teaches children the character of other peoples, their surroundings, the difficulties they have to overcome, and the part their geographical surroundings have played in making them what they are. This knowledge leads boys and girls to appreciate the difficulties of other nations and to sympathize with their ideals. When each nation learns to appreciate others and to sympathize with their difficulties, then Leagues of Nations will have little to do, and spears will be beaten into pruning-hooks. Geography sympathetically taught can do much to foster such an atmosphere.

In conclusion, a word of warning is needed. Pedagogical definitions and rules are good servants but bad masters. We have defined geography as the study of the earth in relation to man. That idea should guide the teacher as to the material he is to select in geography. But he should not cast aside every fact that does not fit the definition. There are many facts that every well-informed person should know, which do not form part of any subject on the elementary school course of study. For example, the phenomena of eclipses is a part of the science of astronomy; but their effect on man is so insignificant that they are unimportant geographically. Nevertheless, every pupil who passes through the elementary school should have some knowledge of their phenomena and causes. The natural place to teach these

phenomena is in the geography class, when dealing with the geographical importance of the sun and the moon. Many industrial processes, the phases of the moon, the cause of volcanoes, etc., are not strictly geographical; but should, nevertheless, be taught with geography, as they are more naturally connected with that subject than with any other in the course of study. Moreover, in many a lesson, incidents, stories, and curious phenomena will be added to the main facts of the lesson. These curious things are like the sprig of parsley on the platter of meat. They are not the essential part of the lesson, but they add a touch of colour and brightness which gives relief and vitality to the essential facts.

CHAPTER II

GENERAL METHODS

SELECTION AND TREATMENT OF SUBJECT MATTER

THE defects in the teaching of geography are chiefly these:

1. The memorization of many place names, definitions, lists of commodities, boundaries, populations, and areas.
2. The teaching of the geography of each continent, country, and province in exactly the same way.
3. The monotonous repetition of lessons on the same country and province from the same text-book year after year.

Unless freshness of material and variety of presentation remove the sameness and produce a lively interest, it is difficult to see how the study of this subject can confer real benefit. In this Chapter an endeavour will be made to show how these difficulties can be overcome.

The subject matter from the standpoint of teaching may be treated in a variety of ways. The commonest subject matter is a region, which may be either political or natural. A political region is usually either a country or a province. The boundaries of such regions are generally very artificial, formed as a result of war, greed, or might, and often they cut right across geographical features. Very seldom, however, is the political factor dominant in determining the geography of a region. Though Manitoba and Saskatchewan are in Canada and are a part of the British Empire, they are very similar in their geographic features to Minnesota and Dakota in the

adjoining parts of the United States, which are under a very different political system from ours. On the other hand, if adjoining parts of Texas and Mexico are compared, there is a very marked difference, due largely to the different character of the government.

In spite of the fact that geographical features largely ignore political boundaries, the separate countries are distinct entities and have well-known names. They are the units about which people usually think, and must be taken to a large extent as the centres about which geographical knowledge must be built.

A pupil will never get a comprehensive idea of geography until he realizes that each continent is made up of natural regions, in each of which the geographic conditions are similar, and that these natural and political regions have often very different boundaries. Further, similar natural regions are found in corresponding parts of the continents; so that the pupil who knows the geography of the natural regions of one continent, can, to a large extent, deduce the geography of the others. Therefore, the pupil should study both the political regions and the natural regions.

For example, the pupil, in studying the Prairie Provinces, learns the geography of the wheat-fields; and when he studies the United States, he learns the geography of the wheat-fields of Minnesota and Dakota. But if he never learns that the two regions are both parts of the same wheat-fields, his view is a very narrow one. The conclusion is that regional geography can be treated by political or by natural regions, and that, in order to have a proper grasp of the subject, both methods of division should be used.

How should a region, whether political or natural, be treated? The usual order of topics is somewhat as

follows: Position, extent, shape, boundaries, coast-waters, surface, drainage, climate, fauna and flora, industries, commerce, cities, and government. This order of treatment is adopted because it is logical. The drainage is taught after the surface features, because the contours determine where the rivers and lakes are situated. The climate follows the surface and position, because mountains, latitude, altitude, and proximity to oceans assist the pupil in deducing the climate. Vegetation depends on climate, and industries on plants and animals. Undoubtedly this is the view of a region taken by a scientific geographer. It gives a complete picture, with all the parts in their proper position. But it has serious defects as an exclusive method of teaching regional geography in elementary classes.

The chief advocates of this method of teaching geography would state its strong point to be that it is developmental and appeals to the reason. Undoubtedly this is in its favour, for it leads the pupils to reason out the geography of a region. While it is good practice to deduce the position of the rivers of Canada from the position of the highlands and lowlands, to repeat the argument for the United States, Ontario, Quebec, France, Australia, and forty or fifty other regions, makes it mechanical, monotonous, and, therefore, deadening to interest and enthusiasm. A system which, if used occasionally, is a splendid exercise in developmental teaching, becomes, when used without variation, a deadening mechanical process.

This logical method is partly responsible for the loading of the pupil with an immense amount of unimportant detail. A continent can be put through this process, and only names and facts of outstanding importance taught; but when it is applied to unimportant

countries and small provinces, the teacher is almost sure to discuss insignificant facts. Suppose Nova Scotia is being treated under these headings. When dealing with the coast, the pupil may be required to learn the names of a number of bays, straits, and capes which it is not necessary to teach pupils in Ontario. Under the heading of surface, some mountains may be taught, under drainage, some rivers and lakes; though no mountains, rivers, or lakes of Nova Scotia are important enough to teach in elementary schools in Ontario. Imagine the hopeless condition of the teacher who follows this method exclusively when he treats Prince Edward Island!

Then again, it lacks the great essential—interest. A teacher who wishes to create enthusiasm among his pupils will hardly expect to gain his object by announcing to his class that to-morrow he will take up the boundaries of the United States, the drainage of Canada, the surface of Mexico, or the commerce of Argentine. Not one of the headings, with the possible exception of plants, animals, and people, appeals to pupils in the elementary school. Such an announcement is the wrong approach.

It is often said in favour of this method that the pupils learn the facts of geography in their proper relationships. This is only partially true. If political regions are treated, then natural regions are taken up in fragments, and no general view of the natural regions of the world is obtained. If natural regions are treated, then countries and provinces are dealt with piecemeal. Geography, however, does not deal merely with regions, but with people, commodities, trade, distribution of population, and many other things. It is just as important to have a connected knowledge of some of these topics as of Argentine, Peru, or Liberia.

When the strictly regional method is followed,

wheat will be discussed in dealing with many countries. It will be treated under Canada, the Prairie Provinces, the United States, Argentine, Great Britain, France, Italy, Russia, Egypt, India, Australia, and several other countries. In other words, the geography of wheat will be taught in a series of fragments; and the pupils will never have a connected knowledge of this important commodity. To know the conditions under which this cereal grows; how completely these conditions obtain in the chief wheat-growing countries of the world; the chief wheat-producing countries; the methods of harvesting, storing, and shipping in relation to the habits of the people and the natural conditions in the countries; to what countries the wheat is exported; etc.—to have a connected knowledge of all these things is far more important than to have a connected knowledge of the position, surface, drainage, etc., of Peru, Chile, Egypt, or even Russia. Accordingly, while the regional method logically arranges the facts about a political or natural region, it leaves in a very fragmentary state other geographical facts of equal importance.

The second method of arranging material is the psychological or topical method. According to this, topics are selected that appeal to the interests of the pupils; and the geography of a country, a natural region, a commodity, or a branch of physical or mathematical geography is built up around this point of interest.

A few examples will be necessary to make this dear. Suppose the geography of British Columbia is to be taught. Certain facts are of sufficient importance to be learned by a Third or a Fourth Form as the case may be—the irregular coast, the high plateau seamed with mountains, the rivers swinging around mountains and surging through deep dark canyons, the broad forests of giant

trees, the swarming salmon, the varied and valuable mines, as well as the peoples, cities, railways, etc. The whole question is, about what centres should these geographical facts be collected? According to the regional method of division, facts will be taken up under position, extent, drainage, climate, etc. But, as has been pointed out, elementary school pupils have little interest in such things. According to the psychological or topical method, the teacher chooses topics interesting to the pupils and gathers the geography around these.

Such topics as the following might be selected: The size of the trees in British Columbia; the life of the sock-eye salmon; a trip down the Fraser River; the apples of British Columbia; a comparison of Vancouver and Montreal as ports. Each of these should be introduced in such a manner as to command at once the interest of the pupils.

The first topic will be treated in outline, in order to show how to use the method. The pupils should be shown a picture of the big trees, and, as a result of careful questioning, they should estimate the height and diameter of the trees, as well as how close together they grow. The class is then told that the forests that contain these trees are the greatest in the world, and that the purpose of the lesson is to find out why such big trees grow in British Columbia and what use the people make of them.

The teacher next asks what makes plants grow rapidly. When the pupils state that moisture, heat, and good soil are the chief factors, they examine rainfall and temperature maps to find the conditions in British Columbia. The map reveals that this province has heavy rainfall on the coast and on the western slopes of the mountains, much lighter rainfall in parts of the interior, and that

the weather is milder than in other parts of Canada. Then the pupils discuss in which part of British Columbia the largest trees will grow, and where they will be few and stunted. To find why they have heavy rainfall in certain parts and very light rainfall in others they will study the winds from a wind map. By the help of this map they will be able to explain the mild climate.

How does logging differ from that operation in Ontario? Examine the physical map and find out the slopes, the speed of the rivers, and the amount of snow, and compare with the conditions in Ontario. British Columbia has little snow, very steep slopes, and swift, turbulent rivers. Hence, the method of logging will be different from that of Ontario, especially as the trees are so large.

Let the class next work out from pictures the use of the logging railway, the donkey-engine, the overhead cables, and other appliances. Show how the coast, with its long, narrow, well-protected fiords, forms excellent waters in which to raft the logs. Show how the bringing of these rafts to Vancouver and New Westminster has contributed greatly to the growth of these towns. Consider, next, with the class, what use is made of these logs.

This brief outline indicates some of the facts and how they should be related to the main topic. Notice that almost all the facts about the climate of the province necessary to teach to the class are related to the growth of the big trees. The pupils are much more likely to remember that the rainfall on the coast is heavy, when this information is given in relation to the growth of the big trees, than when taught in its place in the position-surface-drainage, or logical method. Besides, the main facts about the character of the coast, surface, and rivers are related to the method of logging in British

Columbia and are brought out in connection with the study of the timber.

It is further to be noted that deriving the climate from the growth of the trees and the character of the coast, surface, and rivers, and from their relation to the method of logging, is just as logical and as truly developmental as teaching geography by the logical method of the scientific geographer. The chief difference is, that in the psychological, or topical, method, the pupils are searching for a cause which they are interested in finding.

Let us examine some of the advantages of this topical method.

1. The topics taught are interesting to the pupil. That will always be the first consideration of the teacher in selecting suitable topics for lessons. One of the first principles of pedagogy is that pupils must be taught through their interests. The thoughtful teacher will, therefore, seek to arouse the attention and the interest of the pupils, for then only will learning be easy for them. The logical method deals with topics that are arranged in a way satisfactory to the geography specialist, but not to the young boys and girls who are beginners in the subject. For them the psychological method, which relates the subject matter to their interests and increasing experience, is necessary.

2. It lends itself to much greater variety than the logical, or regional, method. When the latter method is used, every continent, country, province, and natural region is squeezed into the same waistcoat; but when the topical method is used, there will be as varied a garb as is found in modern fashion. No two regions will be treated alike. Each has its own centre of interest. The geography of South Africa will be centred about

diamonds, gold, and ostrich feathers, of Australia about sheep and rabbits, of Chile about saltpetre beds and the sea-birds making guano, and of Egypt about a river overflowing its banks. The development for each topic will be along a different line, and the pupils' minds are always working in fresh fields towards new conclusions.

3. This method allows the omission of a great many unimportant and uninteresting facts. Most of the unimportant details and names that have gathered around the logical, or regional, method will be omitted when the topical method is used. Since the geography of Nova Scotia deals with such topics as the deep-sea fishermen, the apples of the Annapolis Valley, Halifax Harbour, and the growth of Sydney, there will be no place for such names as Digby Neck, St. Mary's Bay, North Mountain, Cornwallis River.

4. This method relates the facts of geography in a more natural and practical manner. The topics selected, about which the geography is built up, will be those of outstanding importance, and the relation of the geographical facts to these topics will be shown. In this way the emphasis is placed where it ought to be.

In teaching the geography of the Prairie Provinces, wheat-growing is undoubtedly the pivotal fact about which all the others should be arranged. We are interested in the surface and soil chiefly in their relation to wheat-growing. The cities, the railways, and the roads are all, to a great extent, what they are, as a result of wheat-growing. Therefore, that should be the central topic to which the geographical facts are related. In using the regional method everything stands at a dead level.

It will be pointed out, on the other hand, that the use of the topical method will have this result—that the pupils will have a very scrappy, incomplete knowledge of important countries. This is an unanswerable objection to its exclusive use. No matter which method is used, some important geographical topics will be dealt with piecemeal. The correct solution is to use both methods. After the topics dealing with the geography of British Columbia mentioned before have been taught, and the pupils have learned many facts about the province and have gathered these around centres of interest, a new interest will arise in arranging these facts in logical order about the province as a centre. A review lesson might be taught, in which a more systematic view of the surface, drainage, etc., can be taken.

The use of both these methods in dividing the subject matter of geography into units assists teachers to avoid the monotony arising from having to teach the same countries in several successive grades. In the Second and Third Forms, let the topical method be used very largely, and the logical only for summaries and reviews. In the Fourth Form, the geography may be taught by political divisions, such as countries and provinces, using both the topical and the logical methods; but the topical should still be used to a certain extent. In the Fifth Form, when important regions of the world have to be covered, let them be taught according to the natural regions. If this order is followed, although many regions are taught several times, they are approached from a different viewpoint each time; and not only can the pupils' interest be more readily retained, but they also obtain a more comprehensive and scientific view of the geographical features of the world.

CHAPTER III

METHODS OF TEACHING

No matter whether geography is taught by regions or by topics, a good deal of the success or failure depends on how the lesson is conducted. There are four general methods of conducting the teaching lesson, which may be called The Dictation Method, The Book Method, The Question and Answer Method, and The Problem Method.

THE DICTATION METHOD

This method assumes several forms. The commonest is for the teacher either to write geographical facts, definitions, lists of names, commodities, or statistics on the black-board and to have the pupils copy them into their books, or to dictate them to the class. Then the pupils memorize the notes copied into their books, and at the next lesson the teacher tests them to find out whether they can recite the dictated work verbatim. This is geography teaching at its worst, and yet a vast amount of this pernicious work still goes on in the schools. It is the last resort of the incapable and lazy teacher. It is done, not because the teacher believes that it is a good method, but because it is easy and requires no skill or effort on his part. Its effect upon the pupil is to train him in the very bad habit of memorizing words without thinking of their meaning. A child has the ability to memorize sentences whose meaning he does not understand fully almost as well as he can those whose meaning is clear. Nevertheless, memorizing meaningless things in geography can have no effect in training the pupil to

think, or in furnishing him with means to meet many of the problems of life.

It is difficult to find any redeeming features in such a method. It certainly fails utterly in interest, and tends to irritate the pupil and produce a hatred of the subject and of school generally. The teacher sometimes makes the excuse that the pupil cannot express himself in proper English and had better learn the thought idea in the words of the teacher. Two of the most valuable things that can be done in school are to give the pupils ideas and to teach them to express these ideas in suitable English. This method of teaching accomplishes neither.

THE BOOK METHOD

Frequently, the teacher assigns certain pages or paragraphs from the text-book as a lesson to be studied. At the next class period the teacher questions the pupils minutely on the contents of the assigned lesson, in order to find out whether they have studied the prescribed paragraphs and understand them. This method is much superior to the one just described. At least the pupils have to grasp the ideas expressed in words in the text-book. They learn the facts of the lesson and try to make them their own. Instead of solving problems themselves, they are simply reading the solution to the problem and trying to understand it. This method tends to develop a habit of mental dependence, and not one of independence and investigation.

Further, a lesson following this method tends to become a dreary task during both the learning and the recitation. Only the knowledge of the disapproval of the teacher for not knowing the lesson keeps prodding the pupil to continue his task, and many times he finds his mind wandering from the printed page. Besides,

the recitation of it next day is lifeless on the part of both teacher and pupil; and only a teacher utterly lacking in enthusiasm and spirit can pursue such a course habitually.

The text-book is not to be read or even to be studied mechanically, but is intended to furnish the material for solving the pupil's problems, just as pictures, maps, and experiments serve the same purpose. The pupil should always be prepared by lessons to read the text, in order that he may approach it with a definite purpose in view. A person who studies a book to find material to support his case in a debate, reads it in quite a different way from the person who picks it up casually, or from the pupil who reads it as a task. The former is lost to everything outside of what he is reading, his mind is rivetted on every sentence; there is no danger of lack of attention or of his falling asleep. That is how the pupil should approach his text-book. But to accomplish that he must have some purpose in view.

THE QUESTION AND ANSWER METHOD

The usual method pursued by the earnest teacher is the development method. This procedure is carried out during the recitation period. The teacher, by careful guiding questions, leads the class to take the first steps in reasoning themselves. If the large question to be developed is why Toronto has become a great city, or what part is played by the St. Lawrence River in the growth of Canada, the facts and relations are not told to the pupils as they would be if they read them from a book; but are worked out in class by the use of maps, pictures, etc. Step by step the pupils advance through the course of the reasoning to the conclusion.

This method has much to commend it. The pupils'

minds are active, are passing through all the stages of the reasoning process, and are working out conclusions for themselves. But it has its limitations. Every step is guided by the teacher. The teacher's questions keep the pupils on the right track, just as a child walks up the stairs holding his parent's hand. As it may be a good thing for a child to climb a whole stairway alone, even if he occasionally stumbles, so it is a valuable practice for the pupils to go through all the steps of solving a problem, even though they occasionally stumble or perhaps fall.

There is a further limitation in this method which is common to the solutions of questions by a whole class. Each question asked by the teacher can be answered by only one pupil. The teacher cannot be certain that the minds of the others are grappling with the question, and he is never sure that the correct answer given by a pupil is understood by the other members of the class. Frequently, some of the pupils fail to follow a step and are unable to follow the succeeding steps.

THE PROBLEM METHOD

In physics and chemistry the pupils are given exercises or problems to solve. This they accomplish by means of experiments in the laboratory. In algebra, geometry, and arithmetic, also, a very large part of the work is the solution of problems. The consensus of opinion among teachers of geography is that the same method should be more largely applied to this subject.

Certain terms have been introduced recently into pedagogical literature to describe this view in regard to classroom method. The terms problem, project, question-problem, and project-problem have obtained a wide use. Their meaning has been limited in various direc-

tions by different educationists to fit their own views. One of the latest books on the project method, after quoting fifteen different definitions of the project, all formulated by reputable educationists, and showing the defects in each, ends by giving a sixteenth definition. But a project, according to the most generally accepted meaning, requires the making of some concrete thing; and such a project will involve several problems. Owing to this difference of opinion it will be best not to be too dogmatic; accordingly, the term "problem" will be used in this Manual, and in a rather flexible manner.

According to the problem method, when a topic in geography is to be taught, it is put in the form of a problem to be solved by the pupils. This is also a development method. Each pupil may be engaged on the same problem, or several pupils may attack different problems. Generally the first method is more easily managed. After the problem is introduced to the class, its meaning made clear, and the interest of the pupils aroused, each member attempts its solution either at home or as seat work. Only after each pupil has intelligently attempted the solution, is the problem discussed in class. The steps are then correlated, the difficulties are overcome, and the solution completed.

In order that the pupils may solve geographical problems, they must have materials to work with, just as certainly as the student of physics or chemistry. The geographical materials with which the pupils work are observations, experiments, the maps in the text-book, wall maps, pictures in the text-book and other pictures, the text-book, geographical readers, and reference books such as atlases and encyclopædias. The pupil cannot usually solve the whole problem without guidance. The teacher will give directions. Then each pupil, with these

instructions, will work out the problem from the material available.

The method can best be made clear by an illustration. Suppose the problem to be solved is—Why has Montreal become a great city?

The teacher should first arouse the interest of the pupils by telling something about the early history of Montreal and its growth; then seat work is assigned. First pictures of Montreal, showing the harbour, bridges, public buildings, etc., either in the text-book or collected by the pupils and the teacher, are left with the class, and several questions are attached to each of these pictures, which the pupil can answer by a study of the picture itself. The pupils examine the pictures in turn, in order to learn what they can about the city.

The teacher writes on the board the following exercise to be worked by each member of the class:

Why do the ocean steamers unload and load at Montreal? What hinders navigation from Montreal to the sea? What rapids are there from Montreal to Kingston? For what parts of Canada will goods from overseas be unloaded at Montreal? On the school globe measure the distance from Montreal to Liverpool, and the distance from New York to Liverpool. What commercial advantage has Montreal over New York? To what parts of the world does Canada ship most goods (text-book)? Which transcontinental railways pass through Montreal? How does the wheat from the prairies reach Montreal? What other exports will be shipped from Montreal?

Which of the following factors necessary for successful manufacture is Montreal well provided with: (1) cheap power, (2) cheap and efficient labour, (3) good transporta-

tion facilities, (4) accessible raw materials, (5) markets near at hand?

To what extent is Montreal favourably situated for manufacturing? What raw materials are readily obtained? What large tributary empties into the St. Lawrence River at Montreal? How far up is it navigable (text-book)? What is the chief product brought down the river to Montreal?

From a temperature map find the winter temperature of the city. How does this low temperature affect navigation? State the chief reasons why Montreal has become a great city.

After each pupil has endeavoured to solve the above problem, he comes to the class interested in Montreal, eager to learn more about it, and anxious to have his difficulties overcome, for he will not always have been able to solve all the parts of the problem. He has already gained many ideas for himself from pictures, maps, and the text-book. In the class the whole problem is discussed, the facts are arranged in logical order, summarized on the black-board, and from the text-book reading is assigned on Montreal and subjects related to it.

The problem assumes many forms. It may be to work over the geography of a country for a particular purpose, to get information to describe a journey down a river or over a railway, to debate the relative merits of two cities, etc.

The advantages of the problem method of teaching a lesson are many:

1. The pupil is trained to rely upon himself in the solving of geographical problems. Each pupil first of all learns from pictures, maps, books, etc., all he can about

the subject, before it is discussed in the class. This makes him resourceful, self-reliant, and daring in initiative.

2. It gives the pupil new power. Instead of using a map merely for the location of places, he learns, while solving his problems, that the greater part of the geography of unknown regions can be discovered by a study of suitable maps. Pictures are no longer merely entertaining, but become useful sources of information of every kind.

3. Geography has a new interest. The pupil feels in solving a problem that he is doing something worth while; he feels that he is learning to investigate problems that are useful. The thrill of overcoming difficulties unaided produces enthusiasm, which is shown in the class by rapt attention and vigorous questioning and discussion.

A great deal of the success of this method depends on the skill of the teacher in guiding the pupils to the selection of suitable problems. For it is important to remember that the pupils who are encouraged to suggest problems will be most eager to attempt the solutions. If the problem is considered useful by the pupil, if it touches his daily life, it will make most appeal to him. Teachers, who hesitated at first to adopt this method, have become ardent advocates of it after a short trial.

4. The problem method sends a pupil to his text-book with a purpose. Instead of reading a prescribed lesson to be later recited in class, the text becomes an instrument which he searches for information to assist in the solution of a problem. For after he has learned what he can about his problem from pictures, maps, observation, experiment, and discussion, he will turn to his text with eagerness to find what additional information it contains.

CHAPTER IV

HOME GEOGRAPHY AND CONCRETE MATERIALS

HOME GEOGRAPHY

THE basis of all geography is the home district; and the child who has filled his mind with definite pictures of the relationship of the land and water forms to the people, the methods of transportation, the occupations of the people, the trade, exports, and imports, the manufacturing processes, the influences of weather and climate, the natural phenomena, and the political conditions of his home district, has laid a solid foundation upon which can be built a knowledge of the geography of the whole world.

The pupil who has studied the relation of a local hill to drainage, to wind and weather, to transportation, to agriculture, and to health, will find that, when he tries to grasp the geography of the Rocky Mountains, he is studying the same thing, but on a gigantic scale. Therefore the careful observation of the geographical factors of the home district is of paramount importance.

The child receives much of his knowledge through the senses, and especially through the eye. During recent years the great value of concrete material in teaching has grown in appreciation, visual aids are being rapidly introduced, and a whole literature in connection with its use is now available.

The teacher has much to learn from the methods of the shrewd business man. The latter studies the psychology of both young and old, and makes his appeal

accordingly. The newspaper with its pictorial supplement and its picture page, and the railway and the steamship companies with their pictorial folders and their lantern slides and moving pictures for loan, have shown how to compel the interest of people; and there is no new invention or discovery that the advertiser does not seize at once in order to attract attention. The newspaper publishers hold the attention of boys and girls by such means, and induce them, by crossword puzzles, to spend hours poring over dictionaries; the teacher should be just as alert to use each new device that will make his teaching more effective.

Concrete material will be discussed under the following headings:

1. Observations
2. Excursions
3. Experimentation
4. Modelling and Constructive Work
5. Pictures
6. Maps and globes.

OBSERVATIONS

To be valuable, observations must be systematic and exact. It is of little use to tell the pupils to go out and observe the weather, the sky, the horizon, the work of a stream, the course of a road or of a railway, or the goods imported on steamboats. The pupils do not know what to observe unless they are given very definite instructions. While the most effective method, in many respects, is by class excursions, the majority of the observations will have to be made by the pupils individually and unaccompanied by the teacher.

If the teacher intends to take up the phases of the

moon in class, then one month in advance he should have his pupils begin their observations. From time to time as needed, he should give them the following instructions, beginning just before the new moon:

At eight o'clock each evening find the position of the moon. Note whether it is east, south-east, south, south-west, or west. Make a drawing of its shape, marking the east and the west sides. In what direction do the horns point in relation to the sun? Notice it again each evening an hour later. Has it moved? In which direction? At the end of the month draw a semicircle to represent the path of the moon across the sky; mark the right-hand end of it west, the left-hand end of it east, and its centre south. From the records made during the month mark the position of the moon at eight o'clock each evening on this semicircle, and also make a drawing of its shape. Notice throughout the month whether the moon can be seen during the daytime, and if it can, note its shape and position. Compare its shape and position during the day with its shape and position the night before.

Suppose the teacher is going to take up local transportation with the class, then as preliminary work the pupils should observe the local roads. The teacher might give the following instructions:

How many roads enter the village? What relation have the roads to the centre of the village? What materials are used in building the roads? Of what shape is the surface of a good road? Why does a ditch run along each side of a country road? What becomes of the rain that falls on the road? Why are certain roads of the district curved? How is the slope over a hill made more gentle? Why is it made less steep?

Count the number of automobiles and wagons that pass along each of several roads during an hour. Explain why some roads have more traffic than others. Examine a map of the township or of the county, and find the relation of the villages to the roads. Make a list of all the commodities that pass along a road during a week.

Such observations as have just been outlined should always be made in preparation for the class discussion of the topic, and the teacher should take a few minutes during each day to find out how the class have been getting along, and to clear up any difficulties that may have arisen. Finally, when the observations are complete, which may take a day, a week, or a month, the topic is discussed in class, and the pupils, with their minds filled with definite pictures which they have gained themselves, will approach the lesson with enthusiasm.

These two examples of instructions for observations have been written out in detail, in order to emphasize two points. First, the instructions must be complete and specific, and secondly, they must be of such a character that the pupil can reasonably be expected to make them. There is no use asking the pupils to trace a stream to its source or to find the internal structure of a hill; usually these are too difficult to accomplish.

In discussing how to teach the various topics in the different Forms, examples of observations will be given, accordingly, and nothing more need be said here on this point.

EXCURSIONS

The school excursion is difficult to conduct, but of great value when properly carried out. We have become so accustomed to thinking that teaching must be conducted

in ordinary classrooms, that the possibilities of good teaching under other circumstances have not yet been understood by the public, nor even in many cases by the teacher.

The excursion has a great advantage over the individual observation, for the teacher is present to direct, explain, and answer questions, as the different objects or processes appear.

The excursion should be undertaken only after the class has been carefully prepared for it. It should be conducted with one definite object in view, and the pupils should understand what that object is. The purpose should be discussed in class before the excursion is made.

For example, suppose the class is going to visit a saw-mill; the pupils should have full instructions what to observe, just as if they were going to make the observations individually. The teacher should outline the observations as follows:

Describe the raw materials used in the mill. Whence did they come? How were they brought to the mill? How are they carried to the saw? Describe the process of cutting them into lumber. What is done with the lumber immediately after it is cut? How is it piled? Why? What are the other products of the mill? What is done with them? How is the lumber shipped? Where is the lumber chiefly used? How many workmen are there?

When the pupils return to the classroom, these additional questions should be discussed:

If the mill were closed, how many people in the village would lose by it? What factors were most important in bringing the mill to the village? The reasons generally would be: Handy raw material, cheap

power, cheap labour, a good market for selling the lumber, cheap means of transportation for the logs from the forest to the mill, or good boat, railway, or road transport for shipping the lumber?

With such guidance the pupils' time will be fully occupied, and discipline will be much easier for the teacher. Every excursion, whether it be to study river erosion, the geographic influence of a hill, the plan of a village, or the work in a post-office, must be carefully prepared, and the pupils must have specific instructions as to what is to be observed.

EXPERIMENTATION

It is possible, with a very small expenditure, to equip an elementary school with sufficient apparatus to perform many experiments that are of great value in the courses in geography, nature study, and agriculture. Nothing will contribute more to arouse the interest of the pupils and to clarify many of the most important principles of geography.

For the experiments in geography there are needed a case containing 12 test-tubes, 1 beaker, 1 Florence flask, 1 crucible, 1 funnel, 1 evaporating dish, 1 thermometer, 1 alcohol lamp, 1 retort stand with ring, 1 wire gauze, some filter-paper, glass tubing, corks, and wood alcohol. The other material and apparatus necessary, such as bottles, cups, plates, and tin cans, may readily be obtained from the children's homes.

Experiments should usually be demonstrations performed before the class, and many of them can be repeated by the children at home. A full discussion of the experiment should take place in class.

More detailed information about experiments will be given in dealing with the courses of study for the different Forms.

CONSTRUCTIVE WORK AND MODELLING

Frequently, natural land and water features can be modelled in sand, plasticine, or some other plastic substance. A box three feet long, two feet wide, and three inches high, placed on a low table, is suitable for use in modelling in sand. The inside of the box should be puttied and painted to make it watertight. Clean sand obtained from the beach should be kept moist for the use of the teacher and the pupils. Where water forms are to be illustrated, plasticine or modelling clay are more suitable than sand. Land and water forms, however, can usually be shown much better on the school grounds or on the side of the road. Occasionally, an apt pupil or the teacher may have a talent for modelling, and may model elaborately in plasticine an extensive land area, such as a continent or a country, or one showing interesting land forms. Such relief models can be kept permanently for use in teaching; and in a short time the teacher will find that his growing collection of models is of great value to him. Models of a volcanic region, a broken coast-line, a fiord coast-line in British Columbia, the Niagara region showing the escarpment, gorge, and falls, the Yellowhead Pass, and many other features based on accurate physical maps are of the greatest value.

In many elementary schools in Ontario constructive work in paper and wood is taught. Such work can be used successfully in teaching geography. An Eskimo house, an Indian's tepee, a desert scene, and many other

features may be worked out. Not only is such work valuable for the pupil who constructs it, but the objects also assist the other members of the class in forming more exact pictures of geographic facts. One large project to which all the pupils contribute constructive work, such as the making of a Chinese village, forms an excellent exhibition for parents' day.

PICTURES

The great value of pictures in teaching geography has never been fully realized. Since only a very small part of the world can be visited, and only a few of the activities of mankind can be actually seen, correct mental pictures of the majority of the facts of geography can be obtained only from pictures, word pictures, and maps. Maps can give only generalized knowledge, and word pictures may lack reality. Pictures, however, usually give a very clear idea of the real object. This is the age of pictures, and every sort of institution uses them for entertainment and for instruction. The school can make excellent use of them.

The best way to use pictures is to give them to the pupils for examination as seat work. Suppose several lessons on Japan are to be taught, and the school possesses half a dozen pictures showing life and industry in that country. The pictures are mounted on stiff cardboard, and questions are put at the bottom of each, to be answered after a careful study of the pictures. During a study period these six pictures are passed about among the members of the class, until each has been studied by the whole class, and the answers to the questions have been prepared. When the class is called, the pupils have already learned many facts about Japan, and their minds contain vivid pictures. They are interested

before the lesson begins; and he is, indeed, a dull teacher who cannot arouse enthusiasm after such a preparation. Such picture study should usually be the first step in the teaching of a topic or in the solving of a problem.

It is surprising how much information can be obtained by examining suitable pictures. The following outline of a lesson based on the pictures found on page 29 and page 69 of the *Public School Geography* shows that all the main features of a glacier may be worked out by the pupil from these pictures.

PICTURE STUDY LESSON: GLACIERS

Problem: To learn the main features of a glacier from the picture.

Presentation: What season of the year is it?
Summer.

Give proofs that it is summer.

What is the white substance?

What borders each side of this snow and ice?

Where do the snow and ice lie?

How far is the ice from the people picnicking?

What is the temperature of the air where the people are?

(Here the teacher tells the class that such a mass of snow and ice down in the warm valley is called a *glacier*.)

What shape is the upper surface of the glacier?

Where is the curve of the arch steepest?

In what part of the valley is the glacier widest?

(Page 69)

What covers the tops of the mountains?

Why are some peaks not covered by the snow?

Where is the upper end of the glacier?

How do you account for the glacier being down in the valley where it is warm?

The answer to this cannot be learned from the picture, but the question will start the pupils thinking about the problem of the flow of ice.

The following black-board summary should be written as the lesson proceeds. It indicates the completeness of the knowledge that the pupils can obtain from a single picture.

BLACK-BOARD SUMMARY

GLACIERS:

Position—in a valley

Shape— arched surface, widening above, tongue-shaped below

Surface— white

nine moraines

many cracks very deep, a few feet wide

Origin— in the snow-fields above.

Not many pictures may be the subject of so many questions; but all have their lessons to teach, and they may be made very valuable as concrete material.

Often, when just one point is to be illustrated, the picture may be shown to the whole class. Usually far better results are obtained by the pupils studying the pictures at their seats.

The illustrations in the text-book in geography are most important sources of picture study. As each pupil has a copy, these can be studied in class as well as at the seat. Every school should have a special collection of pictures for geography study.

Suitable pictures may be obtained from the daily papers, and especially from the pictorial Saturday supple-

ment. All large railways and many government departments issue booklets and folders containing pictures of landscapes, cities, buildings, industries, and almost every other class of geographical feature. Most artistic geographical pictures are produced in *The National Geographic Magazine*, published by the National Geographic Society of Washington, D.C. Many schools already subscribe for it, and if the monthly numbers are kept, in a few years the school will possess a collection of fine pictures of all sections of the world. Other illustrated magazines, such as *The Graphic* and *The Illustrated London News*, have every week pictures from many parts of the world.

The National Geographic Society of Washington has issued several sets of pictures specially prepared for teaching geography. A printed description accompanies each picture. A. & C. Black issue *Travel Pictures* put up in packages of forty-eight, of which half are coloured. These are specially prepared for teaching geography. There is a packet on each of the continents, and special ones on the British Isles, the British Empire, and one on land forms. Black's *Picture Postcards* of people, scenery, etc., are also excellent for use in geography teaching.

Pictures for teaching purposes should never be pasted into scrap-books. Sheets of cardboard of uniform size (eleven inches by eight inches) should be cut, and the pictures should be pasted on these. Where a picture is too large, the projecting part may be folded in. The questions to be answered from the picture may also be written on this cardboard. The pictures, classified by countries, products, industries, or in any way which is most suitable, should be kept in folders, all on one topic being in one folder. These folders may be kept in a box

of the proper size, in the same way as a business man keeps his correspondence in a filing cabinet.

STEREOGRAPHS

Twenty years ago almost every home had a stereoscope and a set of stereographs with which to entertain guests. What our parents used for entertainment, the teachers of the present day might use for teaching geography. The stereograph has great advantages over the flat picture, as it shows depth and perspective. Many features not revealed at all in the picture stand out clearly in the stereograph. Undoubtedly in every school section there are many unused stereographs and stereoscopes that might readily be collected by the teacher and put to effective use in teaching geography. The stereograph should be used by the pupils for seat work.

Recently a set of one thousand stereographs has been prepared specially for Canadian schools. These have been carefully selected, and each has questions and a description printed on the back. They have been prepared by Canadian educationists. Schools that can afford to obtain them will find them of great value.

LANTERN SLIDES

Projection lanterns are already available in many elementary schools, both rural and urban; and since there is such a wide distribution of electrical power in this province, there should be more lanterns in our schools.

The lantern slide has a great advantage over the picture, since it can be seen by all the members of the class at once. With a slide before the pupils the teacher may elucidate the topic under discussion; but he must

see to it that the slides do not become the central feature of the lesson. They are to be used merely as a means to produce clearer impressions.

When the industries of Japan are being taught, at a point where rice culture is the topic, a slide showing people working in a rice-field should be used, and by questioning the class should be taught the chief facts of the process. As other industries are discussed, other slides are shown, but the lesson must always be the main object; the entertainment by the use of the lantern slides must be reduced to a minimum. Usually not more than four or five slides can be used profitably during a teaching lesson period, and often fewer than this will be used. The lantern slide is not of great use for drill or review.

A few words may be said about lanterns. All the difficulties in managing them have disappeared owing to modern improvements. Where there are electric lights in the school, the lantern plug is screwed into any lamp socket, and the light is turned on. The luminant is always a film lamp such as is used to light houses, but more powerful, and it requires no more attention than the lights in the home. A plaster wall painted white or any light colour makes a satisfactory screen, and the room is made sufficiently dark by pulling down the ordinary blinds, although, if dark blinds can be put on the windows, the picture will be more brilliant. A new screen, called the daylight screen, is now largely in demand, and will soon be exclusively used for work in the classroom. With the daylight screen the lantern is placed a few feet behind the screen, and can be used in any classroom with the ordinary blinds pulled down. Where the school is not wired for electricity, lanterns can now be obtained which are run by the battery of a motor car.

Lantern slides can be made, purchased, or rented. The best way to obtain a collection of slides is to purchase them as the need arises. When the teacher sees pictures or maps that are useful for teaching, he can always get slides made from them. Plates of glass covered with gelatine can be bought very cheaply, and on these any drawings, tables, or writing can be made, and projected by the lantern.

The Canadian National Railways; the Canadian Pacific Railway; the Natural Resources Intelligence Service, Department of the Interior, Ottawa; and the Ontario Motion Picture Bureau, Toronto, all these have many thousands of slides, generally in sets, which they loan to schools for short periods. Usually the school has to pay the transportation charges. For details of cost write each. As these slides are well selected, beautifully coloured, and accompanied by extensive explanatory notes, teachers have available at low cost some fine teaching material.

MOVING PICTURES

Much has been written on the educational value of the films, chiefly by those who have never tried them. Their use for propaganda, advertisement, and entertainment shows how attractive they are to people generally. They make a special appeal to the young. It is certainly strange if the school cannot use an instrument that has been made so effective by the business man.

There are already a number of motion picture machines in the elementary schools; and since the Provincial government has now collected the largest library of educational films in Canada, it is important that the schools should know how to use these films to the greatest advantage. If a number of films illustrating some

industrial process or some geographical phenomena are shown to a class, the pupils will learn much, but not nearly so much as the films can teach after proper preparation, because to look at a rapidly moving film is much like studying the workings of a factory by running through it at full speed. The pupil is overwhelmed by the rapid succession of things shown on the film, unless he has already been prepared for them. Just as the study of a topic in geography begins with the individual study of pictures and is continued by the class study of lantern slides, so it might be completed, vivified, and made real by ending with the study of the film.

Suppose the teacher has been explaining the method of gold-mining. First, the pupil finds out what he can of the different processes by a study of pictures. Next, in class, the teacher, if possible with the help of lantern slides, explains the different processes of mining. The pupil now understands the drilling and blasting of rock, the transport of the mineral, the grinding, sorting, and extraction of the metal from the mineral. But, since his knowledge has been obtained by a study of pictures and by discussion, it is somewhat lacking in reality and motion and is disconnected. Finally, let him see a film of these processes one after the other. Now he is able to grasp the full significance of the rapidly changing scene, and what was before disconnected becomes blended into a continuous whole, and the whole becomes more real and vivid, so that the impression left will be lasting.

It is not generally known to teachers that educational films on almost every geographical theme are available in Ontario. If the teacher wishes to take a trip through the Great Lakes, across the Rockies, up the fiords of Norway, or to go down the Hollinger mine, through a salmon cannery, or to see whales caught in the Southern

Ocean, the Ontario Motion Picture Bureau has films to illustrate all these; and this Board is anxious that the teachers of the province should make use of them. A nominal charge of twenty-five cents is made for each film, and the Board pays all the transportation charges. It is doubtful whether such a collection of educational films is available on such favourable terms to the schools of any other part of the world.

MAPS

The Great War impressed upon the world the importance of maps, and set everybody to work following the campaigns in the many maps that crowded the daily papers. It is safe to say that maps are the most valuable material with which the student of geography works. The best results can never be obtained in teaching the subject unless the maps in the text-book and the wall maps in the schools are of the best quality. Every pupil should be so trained in the interpretation of maps that he may be able to describe the geography of an unknown region by a study of various maps of that region.

The best type of wall map is one in which shades of green and brown are used to indicate the heights of land, the green representing the lowlands and the brown the highlands. Different shades of blue represent the different depths of oceans, seas, and lakes. The political boundaries are marked by red lines bold enough to be seen from all parts of the classroom. The rivers are in deep blue or black, and the railways and names are in black. On such a map the rivers and railways stand out boldly, since the colours, instead of cutting across the rivers and railways, tend to follow them. Such a map uses colour to represent the dominating geographical

factor—the surface. Besides representing height by colour, mountains may be further represented by shaded hachures. The best wall maps in the world are of this character, and so skilfully are the hachures drawn that relief stands out more clearly when viewed from the back than from the front of the classroom.

Every name put on a wall map tends to break the continuity of the physical features represented. Though a single name does not make much difference, the obscuring effect of many is easily seen by looking at an atlas map so crowded with names that scarcely any other feature can be seen; it is almost impossible to follow a river or railway or to locate the highlands and lowlands. On wall maps for teaching geography only those names should be printed that are important enough to be taught the pupils in school. If this principle were carried out, a large number of the names in most wall maps would disappear, much to the advantage of the map for teaching purposes. Names printed on a wall map are valuable only for class work when they are printed large and clear enough to be read by all the pupils. It is self-evident that a name printed in type too small to be read serves no useful purpose. Therefore, the names should be in block letters of large size.

Many good teachers prefer maps without names. Such maps have much to commend them. With no names to break the continuity, the surface features stand out clearly, the rivers and railways, even when represented by thin lines, can be followed with ease. On such maps the cities are represented by black or blue squares or circles of different sizes, according to their importance. The only advantage of having the names is that the pupils, seeing them constantly, have them fixed in their minds; but it is doubtful whether this

feature compensates for the obscuring effect. For review and drill the map without names has a distinct advantage.

The latitude and longitude of places are very important, and the pupils should be able to read these figures from the map with ease. The key to the colours representing the height of the land, the depth of the water, and the scale in miles should also be conspicuous.

The usual mounting of wall maps is not to be commended. They have fastened on the bottom a slat or moulding, and at the top a roller which is often of the window-blind type, set in a heavy wooden frame so that it can be rolled up or pulled down readily. Frequently, a set of maps of this type is placed in a case that hangs above the black-board.

There are serious objections to such maps from the school standpoint. In the first place they are very expensive, and more than half of the cost goes into the trimmings of the map. Sets of maps in cases are most objectionable, because only one map can be shown to a class at a time, unless the teacher wishes to take one out of the case, which he usually, in his hurry, prefers not to do. For proper teaching it is often necessary to have several maps at once before a class. The spring roller is excellent as long as it works, but it is frequently getting out of order and is then a constant source of irritation. The maps are continually becoming torn from the roller and from the slat at the bottom. If they are not bought in a case they are difficult to store, and usually stand in a dusty corner, presenting an untidy appearance.

Undoubtedly the cheapest, neatest, and most convenient form of mounting is where the map is cut in sections and mounted on linen to fold, having eyelets

on the upper margin for hanging it from the wall. Such maps are less than half the price of the roller map, have no slit to tear off the bottom, no roller to come loose at the top, several of them can be hung side by side on the wall with little trouble, and fifty of them can be stored in the teacher's desk. They will usually outwear the roller map that costs twice as much.

Let the characteristics of a good map be summarized.

1. It has shades of green and brown to represent heights—green for the lowlands, and brown for the highlands.

2. Different shades of blue represent the depths of water.

3. Political divisions are marked by bold red lines for countries, thinner lines for counties or states.

4. Either no names are printed or only those that are likely to be taught in the schools, and these are in block letters large enough to be read in class.

5. Railways, rivers, latitude, longitude, scale, keys to colours are marked plainly enough to be seen by the pupils.

6. The maps are mounted, cut in sections to fold, and are eyeleted.

The basic wall maps in each school are the physical maps just described, but other maps are necessary for efficient teaching. The following kinds are particularly helpful:

1. Rainfall maps show by shades of yellow, orange, and blue the average number of inches of rain per year. Two maps, one showing summer rainfall and one showing winter rainfall, are most satisfactory. The rainfall map should also have marked on it the prevailing winds over land and water.

2. Temperature maps, one for summer and one for winter, show the heat belts by different colours. Those in which the coloured belts are confined to the continents are of most value.

3. Vegetation maps distinguish by different colours deserts, semi-arid regions, grasslands, tropical forests, deciduous forests, coniferous forests, and tundras.

4. Density of population maps are seldom seen in schools, either as wall maps or in geography text-books, and yet they picture a most important geographical feature. The explanation of the distribution of the people on the face of the earth is the basic problem of geography.

5. Economic maps, by colours, symbols, and names, show the position of the chief industries, and the location of the chief crops, minerals, fisheries, timber, and different kinds of manufactures.

Ontario is well supplied with accurate maps from government sources, from which the pupils can study their own locality. The Department of Lands, Province of Ontario, publishes a map of the Province showing the counties, townships, roads, railways, cities, towns, villages, and post-offices. The Department of the Interior, Ottawa, issues a topographical map of Canada in many sheets, of which those for all the settled parts of Canada are already issued and may be obtained for ten cents each. Every school should have the sheet containing the local school section, and the pupils should learn how to interpret it.

By far the finest maps yet made in Canada are the contour maps issued by the Department of Militia and Defence, Ottawa, at twenty-five cents each. These represent heights by contour lines, have all the roads,

bridges, mills, churches, schools, houses (distinguishing frame from brick and stone), clumps of trees, forests, marshes, and many other features distinctly marked. From these maps the exact height, the nature of the surface, the position of all buildings and trees, as well as the roads, can be determined. No school in the parts of Ontario covered by these maps can afford to be without the one of its district, and the pupils should be made familiar with these most scientific maps. Unfortunately, up to the present, these maps cover only southwestern Ontario as far as Toronto and Eastern Ontario from Kingston and Ottawa eastward.

Black-board Outline Maps have the outline of the region—continent or country—drawn on black cloth on which crayons may be used. As the teacher develops the geography of a region in class, he marks the features on the outline map with coloured crayons, and the pupils see the features, one after another, grow before their eyes in such an impressive manner that the effect will be lasting. Such a map is more useful than one drawn on the black-board, since it is more accurate, saves the time of the teacher, and can be rolled up to be completed at the next lesson.

REFERENCE ATLAS

Every school should have a reference atlas for the purpose of locating places that are mentioned in discussions in literature, history, and current events. Such an atlas should have very complete maps filled with names, and at the back an index containing all the names on the maps, after each of which is placed the number of the map and references indicating the square on which the name appears. The pupils should be just as accustomed to find the location of a place in

this atlas as to find the meaning of a word in the dictionary. Perhaps Bartholomew's Advanced Atlas of Physical and Political Geography, which combines physical maps of all descriptions with political maps, and has a very complete index for finding the names of places, would best serve all types of schools.

OUTLINE MAPS

Outline maps, to be filled in as exercises in geography, are of the greatest value. Instead of having the pupils spend many hours in drawing maps, which when completed have many inaccuracies, it is better, in most cases, to put outline maps in their hands, and let them fill these in with the necessary detail. Such maps should be on paper that will take either ink or water-colour. If these can be supplied to the pupils at a very low cost, so that they may be freely used for both geography and history, their work in these subjects will be greatly improved. Some publishers in Ontario are already making these maps. The teacher can make them by means of a cheap hectograph.

RELIEF MAPS

These have the surface raised to represent highlands, and depressed to represent lowlands. Such maps give a more vivid picture of the surface than do any others; and the school is fortunate which possesses good examples of relief maps. The chief objection is their high cost. For details and prices of suitable maps, see the Appendix.

GLOBES

A good globe is an essential part of the equipment of every school. The larger the globe is, the better, and it

should in no case be less than twelve inches in diameter. It should be either mounted on a stand with a meridian circle or should be suspended by pulleys and counterweight. The latter method allows it to be pushed up out of the way when not in use, and it is always before the class as a silent reminder of the fact that our world is a globe floating in space. This method of suspension cannot be used where the globe has to serve several classrooms in one school. Frequently in teaching the revolution of the earth, eclipses, and other astronomical facts, it is convenient to have the globe on a stand so that it can be carried from one place to another. Thus both methods of mounting have their advantages. A large globe suspended at the front of the classroom and a smaller one mounted on a stand is the ideal arrangement.

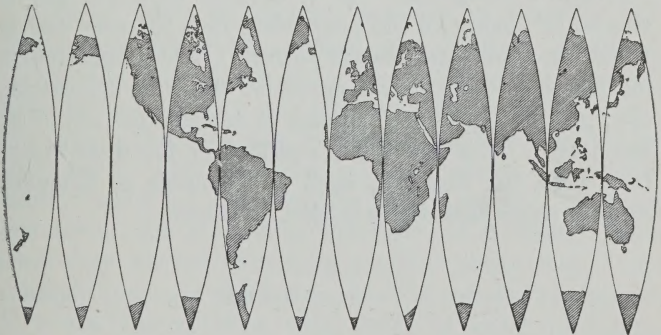
Unfortunately the globe, though so fascinating to children, is used much less than it was a generation ago. It should be in constant use, to correct the false notions conveyed by flat maps. The shape, size, and relative position of places are greatly distorted in maps. Greenland looks as large as Africa on a map of the world drawn on Mercator's Projection, though in reality it is not one-tenth as large. Though Port Nelson is in the interior of North America, it is nearer to Liverpool than is New York, situated on the Atlantic coast. New York and Lisbon are on the same parallel of latitude; and from a map of the world the shortest route from one to the other appears to be along the parallel. In reality it is not; a boat leaving New York for Lisbon should first steer a little to the north of east, and later should turn a little to the south of east; she should follow a "great circle," not a parallel of latitude. These facts are readily seen on a globe, though far from evident by a study of an ordinary map. Indeed, in the study of every country

and continent, its shape, size, and relationship to other regions should always be studied from a globe before it is taken up on a map.

In teaching mathematical geography, latitude, longitude, the equator, the tropics, etc., a slated globe which is coloured black and can be marked by a crayon or a slate-pencil is very valuable, and the larger it is the better. The circles can be marked on it as they are taught.

MAP PROJECTION

The surface of the earth is spherical. Maps, to be absolutely accurate, should be drawn on a segment of a sphere. But such maps are difficult to make and awkward to handle. Nevertheless, whenever an outline from the curved surface of the globe is transferred to a flat surface, there is distortion. When a square piece of the surface is cut from an india-rubber globe, with the outlines of the continents marked, and pressed flat, certain parts are stretched, and outlines are changed in size and shape.



The drawing shows the covering for a globe spread out flat. It is made of a number of oval parts. Suppose it is

made of rubber, and the parts are stretched in their narrow parts until they meet from pole to pole along their cut lines. At the Equator there will be no distortion; but as the poles are approached, every region will be made too wide from east to west on account of the lateral stretching, and this lateral distortion will increase toward the poles. In order that all parts may retain their proper form, there should be a stretching from north to south equal to that from east to west. Then each island and country will retain its proper shape; but the stretching in both directions will make all bodies of land and water larger than they really are, and the nearer the poles the greater the enlargement. The directions of different points from one another will be correct in this map. All parallels of latitude and meridians are represented by straight lines at right angles to one another. But, on account of the stretching from north to south, the parallels of latitude are drawn farther and farther apart as they approach the poles.

This method of map drawing is called cylindrical or Mercator's Projection. It is always used on sailing charts, as among all the projections it is the only one in which directions are always correct. While satisfactory for maps showing ocean currents, winds, temperature, etc., it is not suitable for maps in which areas are to be compared. It is also quite satisfactory for small countries near the Equator, such as Colombia or Ecuador, since in those parts there is little distortion.

CHAPTER V

PLACE NAMES

SUPPLEMENTARY BOOKS

MUCH complaint has been made, and properly, against the memorization of names of places. Nevertheless, all educationists admit that the learning of the names of important places and their location is an essential feature in elementary geography. A careful examination of the contents of newspapers and magazines shows that over fifty per cent of their geographical information deals with location, size, direction, etc., of specific places; while only twenty-five per cent deals with political geography, and less than six per cent with commercial geography. The usefulness from a practical standpoint, therefore, of learning the names and positions of the important places in the world cannot be gainsaid.

The objection in the past has been in regard to the manner in which the names were learned. Lists of rivers and capes, islands and cities, countries and capitals, counties and county towns were memorized, often with no map before the class, and frequently with little idea where they were. This false method has brought the whole memorization of place names into disrepute. Names learned in this mechanical manner are of small value, since they are not studied in a proper connection. For example, a person who has learned the counties of Ontario in a list has to start with Essex in order to locate Haldimand.

Undoubtedly, names should be learned in their regular place as a part of the geography of a region or

topic. They should be studied in connection with the facts which are most important about them, in order that the name may be learned in a usable way.

In discussing the commerce of the Great Lakes, Sarnia, Windsor, and Owen Sound should be taught because of their commercial importance. In discussing the geography of wheat in the Prairie Provinces, Winnipeg, Fort William, and Port McNichol should be taught; and in a lesson on fruit production in Ontario, Welland, Lincoln, Essex, Kent, Grey, and Northumberland counties should be taught. By this method the names are learned in their natural setting, a few during each lesson, so that there is no great burden placed on the memory of the pupils.

Since place names, usually being non-significant to the pupils, are difficult to remember, special devices can frequently be used to fix them in the mind. When a class is told that Brockville is named after Sir Isaac Brock, that Ecuador means equator, because it is situated on this circle, or that Regina means queen and was named in honour of Queen Victoria, these names will be remembered far more easily.

But such devices are not enough. Though a pupil in the elementary school cannot learn the name and position of every important place in the world, yet a minimum number should be memorized. To know the eight hundred most important names is far more valuable than to know the next eight thousand most important; and it is not too much to ask the pupils in the elementary school to learn the former number.

Place names become foci about which the pupils organize their geographical knowledge. In this respect they serve the same purpose as outstanding events in history with their dates. Just as the pupils become

familiar with the multiplication table and outstanding dates in history, so they must learn the outstanding place names in geography. Just as there is drill and practice in spelling and multiplication tables, so there must be drill on place names.

Every teacher should first decide the names which he thinks should be taught. These are learned in their natural setting during the geography lesson, and at the beginning or the end of every drill lesson, practice, preferably on a map without names, should be given in pointing out, pronouncing, spelling, and telling the importance of these names. Twice a year or more often a whole period of drill or an examination test should be given on the names taken during the term.

Variety can readily be given to these drills. After South America or any other region has been taught, each pupil is asked to prepare a list of the places which are important enough to be learned. The lists are compared, the pupils tell why the names on their lists are important enough to be remembered; and from all their lists a common one may be made, which all members of the class accept as a guide. They are interested in this because they have played a part in making up the list themselves. Imaginary journeys may be made from the home town to different parts of the world; and the names, location, and importance of the cities, rivers, lakes, countries, railways, etc., passed may be stated.

As Canada is being taught, the teacher may make lists of questions involving place names, their location and importance, and these may be used for drill when the country is completed. This drill may take the form of a game. The lists of questions are written on cards, three on each, and these are distributed among the pupils.

Each pupil reads the questions, gives the answers, and points out the position of the places on a map. One of the pupils acts as recorder and credits the pupils with one mark for each right answer. Suitable suggestions for questions for twelve such cards are given.

I

1. The most northern sea-port in Canada
2. The largest lake in Manitoba
3. The river between Lakes Superior and Huron

II

1. The chief city of New Brunswick
2. Three important rivers in British Columbia
3. The second largest city in Ontario

III

1. The strait between Prince Edward Island and the main land
2. The chief grain port on the Great Lakes
3. The most important river emptying into Hudson Bay

IV

1. The oldest city in Canada
2. The strait between Newfoundland and Labrador
3. The largest city between Winnipeg and Vancouver

V

1. The two most important passes through the Rocky Mountains
2. The eastern and western terminals of the Canadian Pacific Railway
3. The chief gold-mining town in Canada

VI

1. The largest city on the Thames River in Ontario
2. The chief lake in Quebec
3. The two rivers that join at Winnipeg

VII

1. The city near the entrance to Yellowhead Pass
2. The chief salmon river in British Columbia
3. The largest Canadian island on the Pacific coast

VIII

1. The canal by which Niagara Falls is avoided
2. The city in Ontario opposite to Detroit
3. The largest river emptying into Lake Winnipeg

IX

1. The greatest Canadian river emptying into the Arctic Ocean
2. The strait between Hudson Bay and the Atlantic Ocean
3. The ocean current east of Labrador

XI

1. The island at the mouth of the St. Lawrence River
2. The two termini of the Canadian National Railways
3. The railway running most directly from Winnipeg to Quebec

X

1. The two chief cities of Saskatchewan
2. The Canadian bay with the highest tides
3. The cities at the ends of the Rideau Canal

XII

1. The most fertile part of Northern Ontario
2. The chief apple-growing districts in British Columbia, Nova Scotia, and Ontario
3. The Canadian city with the most pleasant climate

Similar cards may be made for other parts of the world.

Occasionally a geography match of the character of the old time spelling-match helps the pupils to take an interest in learning place names. They are informed that the names taken in the geography lessons are to be used in the match; then sides are chosen, and the teacher gives the pupils in turn place names, which they are to spell; they then locate and perhaps tell the importance of these places.

SUPPLEMENTARY BOOKS

The authorized text-book in geography is the chief source of information for the pupils. If the text is read merely as a task, the pupils will find it difficult to keep their minds on what they are reading, and, consequently, will not clearly understand or retain much of what they read.

Since they must be reached through their interests,

it should always be the aim of the teacher first to arouse in the pupils an interest in the subject to be studied from the text-book, and a desire to search its pages in order to glean facts that will assist them in solving their problems.

This can be achieved in many ways. The assigning of problems to be solved is the best method. When the pupils are asked to find out why we obtain our fruit and vegetables in winter from California, they will search the geography to find the temperature and rainfall of this region, with a zeal which is entirely lacking when they are assigned the page in their geography that deals with California as a lesson to be read. When they are asked to debate whether Toronto or Winnipeg is destined to be the larger city, they will be willing to read all the text-book has to say about Ontario and Manitoba, in order to find points to support their side of the debate.

The pupils may be assigned special topics about which they are to obtain information. This they will give to the class during the recitation period. For example, when wheat-growing in the Prairie Provinces is being taught, one pupil may be asked to find the other chief wheat-growing regions of the world, the quantities grown, and the seasons at which it is grown. Another may be assigned the task of finding the character of the soil and climate under which wheat grows, and still another the methods of harvesting, threshing, storing, and shipping used in different parts of the world.

These examples are merely suggestive of many others that may be used to prevent the study of the text-book and other sources of information from becoming a distasteful task. The key-note to success in the use of the text-book consists in seeing that the pupils always turn to it with a definite purpose in view.

The pupils should be encouraged to use other sources of information besides the text-book. One respect in which the teaching of geography has not been so successful as one could wish is that the pupils have not been trained to use the school and the public library as sources of information. No pupil or teacher should rely on any text-book, no matter how excellent, as the sole source of information. A very important part of education is to learn how to use books; and in no subject can this be attained more successfully than in geography. Accordingly, in solving all the problems, atlases, encyclopædias, year-books, etc., should always be available in the library, and the pupils should have practice in using them. In order to gain skill in this respect, they should become familiar with the use of the table of contents and the index in books, and should learn how to find the position of a place on a map by reference to the index in the atlas. The school library, therefore, should be considered of the greatest importance as a source of material.

But, in addition to reading for information, pupils should be encouraged to read geography and travel books for the mere pleasure which they can derive from them. Of late years there have been large numbers of entertaining and instructive books published, whose appeal is to the young; and just as soon as children can read they may be given books dealing with child and animal life at home and abroad, which are carefully graded to interest children of all ages.

The teacher will find, under Books of Reference, a list of books, technical and supplementary, for himself and for the pupils.

CHAPTER VI

LESSON PLANS

ANY undertaking must be planned before the actual work begins. Before a man begins to build a house, he must carefully think out all the details of the structure, draw a plan on paper, and determine the order in which the different operations will be performed. In order to teach a successful lesson, similar preliminary planning must be done. Not only must the facts be marshalled, but the method to be used at each stage in the development of the lesson must be carefully considered.

The best method is to write out a plan of the lesson. Though a teacher has not time to write a complete plan of every lesson—a thing which ought not to be necessary—yet he should have a note-book in which plans of specially prepared lessons and outline sketches of others should be kept for future reference. If each year teaching plans of a few new lessons are added, it will not be long before a very complete set of teaching helps will be gathered; and these will be of great value for reference. Of course, no plan once drawn up should ever be considered permanent, for the progressive teacher will always be advancing, and last year's method of teaching a lesson will not be good enough for this year.

The different types of lessons, such as the development, drill, and review lessons, have each its own plan. Nevertheless, they have all certain characteristics in common.

AIM

The teacher's aim in teaching the lesson should usually be put in the plan. While the aim is always to teach the facts of the lesson, it should extend much farther. It should include developing a certain sentiment, illustrating an historical event, or preparing for some other lesson. This further aim should also be stated.

PREPARATION

A lesson usually has an introduction. For example, if the climate of British Columbia is to be taught, a few questions on the westerly winds and the Western Cordillera will be a suitable introduction. If the lesson is on some topic dealing with land or water forms or physical phenomena, usually a suitable introduction will be a discussion of some similar phenomena, on a small scale, found in the district. For example, before taking up the geography of the Rocky Mountains, the teacher may discuss with the class the geographical influence of a local hill.

PROBLEM

Often the introduction consists of a discussion leading the pupils to suggest the problem to be solved. If it is proposed to teach the geography of California in the form of the solution of the problem—Why do we get our winter fruit and vegetables from California?—the introduction consists in questioning the pupils as to what fruits are found in the shops during the winter and where they come from, leading the pupils to ask the above question.

Some lessons, however, have no introduction that can be separated from the main discussion; and teachers-

in-training often waste the first five minutes trying to make an introduction where none is called for.

PRESENTATION

The chief part of a lesson plan is devoted to the discussion of the facts of the lesson. In this part of the plan it is frequently advisable to distinguish clearly the facts taught from the method of teaching. These may be placed in two parallel columns, or the matter may be distinguished by underlining or otherwise.

Teachers-in-training seem to have great difficulty in differentiating clearly the matter from the method, yet these two are quite distinct. In every teaching lesson there are certain facts to be taught—these are placed in the matter column. Then a certain method, such as questions, use of maps or pictures, observations, experiments, or telling, is used for the teaching of facts—this is put in the method column.

A very important part of the method of almost every geography lesson is a summary, which is written on the black-board as the lesson proceeds. Where many related facts are taught, it is too much to expect that the pupils, during the first teaching, will remember all of these in their proper relationships. But when a skeleton of these facts is written on the black-board, the class see more clearly the relationship of the different facts and the unity of the lesson.

This summary should consist of mere headings which will call up the facts taught—pegs on which the pupils may hang their thoughts.

After the facts of the lesson have been presented, the first part of the drill should be taken with the summary before the class, but the last part after it has been erased.

It is to be distinctly understood that the summary is not made for the purpose of having the pupils copy it in their books to be memorized.

APPLICATION

Usually after a drill on the lesson, there is an application, which is recorded in the plan. Following a lesson on standard time, simple arithmetical problems should be given as an application of the principle to particular cases. After a lesson on the meaning of latitude and longitude, the pupils may be asked to find from a map the latitude and longitude of some important cities. Frequently, however, in the teaching of regions there may be no application step.

SEAT WORK

The last part of a lesson will usually be the assignment of work to be done by the pupils. This may consist of the solution of problems, the study of maps, the reading of the text-book or of supplementary books.

MODEL PLANS

Plans of different kinds of lessons are given for the guidance of teachers-in-training. While they are divided into development, drill, and review lessons, it must be distinctly understood that single lessons often partake of all these classes. In a development lesson a review of what has been previously taught is often the most suitable introduction, and at stages in the teaching of most lessons, teachers pause to drill on what has been already taught. Moreover, in a review lesson, frequently new facts are introduced and correlated with those already taught.

DEVELOPMENT LESSON: DIRECTION

FORM I

Preparation: Take the pupils into the yard at noon and mark the shadow of a vertical stick, such as the flagstaff. Repeat this for several days. Have the pupils stick hatpins vertically through sheets of paper on a sill of a southern window and mark the position of the sun's shadow at noon. Question in the following way:

Where is the shadow of the hatpin to-day? Where was the shadow yesterday at noon? Where is it each day at noon? Point in the same direction that the shadow of the hatpin falls. Point in the same direction that the shadow of the flagpole falls. Notice that they both fall in the same direction out of doors and in the school. What direction would the shadow have at your homes?

In this way show the pupils that a fixed direction can be found, no matter where one is.

Problem: How will this help you to find your way if you are lost?

Presentation: Tell the pupils that this line runs north and south, mark it on the floor, and put the words north and south at the two ends of it. By questioning teach them that the direction along the shadow and away from the sun at noon is north, and the direction toward the sun at noon is south. Drill on these two directions by giving such instructions as:

Walk toward the north end of the room. Walk toward the south end of the room. Point in a north direction; in a south direction. Place a chair north of the teacher's desk. Which walls of the school run north and south? Which roads near the school run north and south?

Ask a pupil to face north and stretch out his hands at right angles to his body, and let another pupil mark on the floor the direction the arms are pointing. Next tell the pupils that the right hand is pointing east and the left hand west. Mark on the floor these two directions and drill the pupils in a way similar to that used for north and south.

If you are lost, how can you find north and south? East and west?

Application: Ask the pupils to try the shadow experiment at home and find the four directions.

DEVELOPMENT LESSON: LATITUDE AND LONGITUDE

Date: Jan. 8, 1926

Name of teacher:

Subject: Geography, Topic: Latitude and Longitude

Class: Form IV, Junior Grade

Teacher's Aim: To teach the meaning of the terms latitude and longitude, in order that the pupils may understand the markings on maps and globes and the methods by which places can be located on a map or a globe.

Preparation: By questioning the pupils and by drawing a plan on the black-board, let them learn how position is located in a city or town. For example, the position of a house is fixed by saying that it is two blocks east of Yonge Street and four blocks north of Bloor Street, that another is located six blocks east of Yonge Street and one block south of Bloor Street, or that a pupil's desk is in the third row from the right-hand wall and fourth from the front.

The pupils notice that in this method of location, two standard streets (Yonge and Bloor) at right angles

to each other are selected, and the number of blocks east or west of the street running north and south, and the number north or south of the street running east and west give the location of the place. If greater accuracy is required, then each block is divided into lots, and the position in a block may be located still more closely.

In a rural school concessions and side roads are used instead of streets, and the two standard lines at right angles are the two township lines from which lots and concessions are numbered.

Ask the class to describe the position of a marked spot on a slate globe or ball, and when the difficulty is appreciated, place before them a globe, and ask, How can you locate Halifax on the globe? The pupils probably say that it is in Nova Scotia, which itself needs to be exactly located.

After they have learned that the ordinary methods of locating places are not nearly so exact as the method of locating position in towns and townships, the problem may be stated.

Problem: How shall we locate exactly the position of any place on a ball or a globe or a map?

Presentation: Why is it more difficult to divide the surface of the globe into blocks than to divide a township? (The surface is curved.)

Question and drill the pupils on the meaning and the position of equator and poles. Have them point out the poles on a slated globe and mark the equator.

Tell the class that just as there are two sets of lines at right angles to each other in cities and townships, which are used in locating places, so there are two similar sets of lines on the globe.

Draw on the slated globe every fifteenth degree of latitude and tell the class that this is one set of lines on the globe. What relation has the direction of these lines to that of the equator? They are parallel. The pupils will then measure the distance between each two successive lines. How do the sizes of the circles change from the equator to the poles? Select the largest. Where is it located? Tell them that these lines are called parallels of latitude, that instead of six there should really be ninety of them between the equator and each pole, because there are three hundred and sixty degrees in every circle, and that the space between each two is called a degree.

The pupils mark on the globe the names of each of the parallels drawn, namely, 15, 30, 45, etc., and show the necessity for distinguishing north and south latitude. The teacher will mark points on the globe and drill the pupils in telling their latitude.

Treat the meridians in a similar manner. By questioning, the pupils are directed to observe that the meridians, or lines of longitude, are all of the same length, that they are not parallel, but come closer and closer together as they approach the poles, and that they cut the parallels of latitude at right angles. By questions, lead the pupils to see that, as the meridians are all of the same length and have similar relations to one another, there is not one that can be selected as a standard in the same way as the equator is selected as the natural standard parallel of latitude from which the others are counted. Tell the pupils that one has been selected arbitrarily; namely, the one passing through Greenwich, which contains the great British observatory. It is called the first meridian, and 179 others (making 180 in all) divide the surface of the earth into 360 belts; and the

width of each belt is called a degree of longitude; those east of the first meridian measure east longitude, those west measure west longitude.

BLACK-BOARD SUMMARY

As the topic is taught, the following will be put on the black-board:

Position in cities

By streets at right angles

Position in townships

By concession roads and side roads

Position on globe:

1. Curved surface

2. Fixed positions—equator and poles

3. Parallels of latitude—

(1) Parallel to equator

(2) Equal distances apart

(3) Ninety from equator to pole, one degree apart

(4) North and south latitude

Meridians—

(1) Pass through poles

(2) Cut parallels of latitude at right angles

(3) Not parallel, but converge toward poles

(4) 180 of them one degree apart

(5) First meridian at Greenwich

Application: Ask the pupils to find on the globe the latitude and longitude of Toronto, Montreal, Paris, Buenos Aires, Melbourne, and Moscow.

Drill the class again by having them point out on the globe the following positions:

Latitude	Longitude
35 degrees N.	30 degrees W.
45 " S.	135 " W.
70 " N.	60 " E.
21 " S.	140 " E.

Then have the pupils practise finding the latitude and longitude of places on the map of Canada and of other regions of the world.

Seat and Home Work: The class will write the names of the capitals of the chief parts of the British Empire and the latitude and longitude of each found from the maps in the *Public School Geography*.

For home work they will read the section in the *Public School Geography* on latitude and longitude.

PLAN OF A SERIES OF LESSONS ON EUROPE

FORM IV: JUNIOR

General Topic: Why Europe has become the greatest continent.

LESSON I (IN DETAIL)

Topic: How the situation, coast-line, and surface of Europe has contributed to its greatness.

Teacher's Aim: To give the pupils training in map interpretation, in order that they may have the power to learn the geography of a region by a study of suitable maps, and also to make them learn the great influence that geographic factors have had in making Europe the most important continent.

Preparation:**MATTER**

Canada and Europe are about the same size.

Europe's small size and high latitude appear to be disadvantages.

On the black-board the populations of the continents will appear as follows:

Europe.....	400,000,000
Asia.....	975,000,000
Africa.....	140,000,000
North America....	135,000,000
South America....	63,000,000
Australia.....	5,400,000

Europe is surpassed in population only by Asia; but it has a greater population than all the other continents together.

Europe is the wealthiest, most highly civilized, and most progressive. It controls a large part of the other continents, and its people are largely responsible for progress in the other continents.

Problem: Why has this small continent, situated farther from the equator than any other continent, become so great?

METHOD

The pupils will compare the size of the continents by observation of a suitable wall map of the world.

Questioning

Which continents are larger than Europe?

Which are smaller?

Compare Europe in size with Canada.

Compare the latitude of Canada and Europe.

Which of all the continents is the farthest from the Equator?

What effect should the high latitude and small size of Europe have on its greatness?

The pupils compare the population of Europe with that of the other continents.

Which continent is the wealthiest?

Which the most progressive?

Which controls the greatest part of the world?

Which has brought about the most progress in the world?

Situation—

In contact with Asia, the largest and most populous continent.

It is separated from Africa by a navigable sea.

The ocean is convenient for traffic with North and South America.

Coast-line—

Its coast-line is very long, on account of the many inlets.

This brings every part close to the sea, which is good for trade.

It increases the rainfall and moderates the climate.

The coast is bathed by the warm North Atlantic Drift.

The North Atlantic Drift keeps the harbours free from ice, even on the Arctic coast. Compare Norway and Labrador in this respect.

Surface features—

It allows westerly winds to penetrate far into the country.

It gives the country a more varied production, as north and south of the axis the crops are largely different. Although Europe has less range of latitude than Canada, its productions are as varied as those of Canada and the United States together.

With what continents is Europe in close contact?

What separates it from Africa?

What lies between Europe and the Americas?

How has the Atlantic Ocean helped Europe's progress?

Compare the length of the coast-line of Europe with that of the other continents.

What effect has such a coast-line on trade?

What effect has it on the climate?

What ocean current affects Europe?

How does this influence trade?

In what direction does the main axis or mountain range of the continent run?

What advantages are there in having an axis that runs east and west?

The chief ranges of the axis are the Pyrenees, Alps, Balkans, and Caucasus Mountains.

What important ranges of mountains form part of this axis?

Where is the main axis most massive?

The Appenines in Italy, and the Pindus in Greece run south from the main axis; the Vosges and the Carpathians run north.

What ranges run south from the main axis? What ranges run north?

There is a broad plain sloping towards the north.

What is the nature of the surface north of the main axis?

This plain is widest towards the east in Russia.

Where is this plain widest?

The highlands of Scotland and the Scandinavian Plateau break its continuity.

What highlands break its continuity?

The plains in the north of Italy and in Hungary are south of the main axis.

What plains are south of the main axis?

Europe has a larger proportion of level plain than any other continent.

Compare the amount of level plain in Europe with that of the other continents.

Agriculture is widely extended.

In what ways are these plains of advantage to Europe?

Large populations can be supported.

Manufacturing can easily be carried on.

Drill: A drill on the facts taught should follow.

Application: The class will mark on an outline map of Europe the chief coast waters, peninsulas, mountains, and plains.

NOTE.—Below is given an outline of the matter which should be taken up in the succeeding lessons on Europe.

LESSON II

CLIMATE:

The westerly winds blow far into the interior.

The east-west mountain systems scarcely interrupt these winds. Compare with North and South America in this respect.

The great northern plain is well watered, and the rain is well distributed throughout the year.

The summers are cool, and the winters mild, though it is farther north than the inhabited parts of Canada.

South of the main axis or mountain range, the climate is entirely different. During the summer this part of the continent is in the horse latitudes, and this causes clear sky, dry weather, and a healthful climate. During the winter it is in the westerlies and the rains are heavy.

Such rain conditions produce different vegetation (see *Public School Geography*, page 194). This part of Europe can grow winter crops and requires irrigation for summer crops except the olive.

The differing vegetation north and south of the mountain axis gives a great variety of productions in a small range of latitude, and leads to a large exchange of products between the north and the south.

VEGETATION:

Steady rains throughout the year cause dense forests of hard and soft wood over the northern plain.

Much lumber is produced.

When the forest is cleared, the land is excellent for farming.

Wheat, oats, barley, rye, potatoes, sugar-beet, and all domestic animals are raised.

The winter rains in the south allow two crops.

In winter, wheat, barley, and vegetables are grown, as the weather is mild.

In summer, olives and grapes grow in arid soils, and oranges, lemons, and figs grow where there is irrigation.

There is little forest in the south, as trees cannot survive dry summers. Hence, the land was easily cleared, and the first great civilizations of Europe started here. (See Black-board Summary below.)

LESSON III

SURROUNDING SEAS:

The continental shelf is very wide off the west coast.

There is an abundance of food fish; hence, Europe is the chief continent in respect to fishing. The fishing grounds extend to Iceland, into the Arctic Ocean north of Russia, and south to the coast of Morocco. Cod, haddock, plaice, sole, mackerel, herring, tunny, and sardines are the chief fish.

The many inlets make excellent harbours for the fishing fleets.

Fishing trains men to become sailors.

NAVIGABLE RIVERS:

In the northern plain, the rivers, though not large, are navigable.

Shipping penetrates to the very heart of the continent.

As the mouths of the rivers north of the axis are estuaries, they are scoured by tides and can be entered by the largest ships.

The rivers south of the central axis are shorter, too rapid for navigation, and have deltas at their mouths.

DISTRIBUTION OF MINERALS:

Coal and iron are more widespread than elsewhere. England, Scotland, France, Belgium, Germany, Poland, and Russia are well supplied.

Other useful minerals are widespread—tin in England, lead and zinc in Spain, Germany, and Poland, mercury in Spain and Austria, oil in Russia and Rumania. (See Black-board Summary below.)

LESSON IV

CHARACTER OF THE PEOPLE:

They are the most skilful and intelligent in the world.

They have colonized, and control most of the other continents.

They are leaders in science, art, inventions, and government.

They have the greatest educational and philanthropic institutions.

They have the greatest sailors, soldiers, and explorers.

They have the most skilful workmen in all branches.

MANUFACTURING:

Coal and iron are widespread and close together.

There is a dense population of skilled workmen.

The facilities for internal and external transportation are many.

There is a large and wealthy population to purchase commodities.

Large populations in other continents are easily and quickly reached by sea.

BLACK-BOARD SUMMARY FOR THE SERIES OF LESSONS

Reasons why Europe is great:

Position—In relation to Asia, Africa, and America

Coast— Very irregular—harbours, climate

Warm currents—harbours

Surface— Axis east and west—effect on climate

Plains to north and south—varied production

Climate—Effect of westerlies

Winter rains in south

Vegetation—Forests in the north

Two crops in the south

Seas— Shallow for fishing

Inlets—harbours, sailors

Rivers— Navigable in the north

In the south

Minerals—Tin, iron, and coal

Oil, lead, zinc, and mercury

People—Colonizers

Leaders

Education high

Sailors, soldiers, explorers

Skilful workmen

Manufacturing—Coal and iron

Skilful workmen

Dense population

Home market

Foreign market

Drill: At each division of the lesson there will be a drill on what has been already taken. After the teaching has been completed, a drill on the whole lesson will be taken with the black-board summary before the pupils. Then the summary will be erased, and a further drill will

follow. Finally, a number of pupils will be asked to give reasons why Europe has become so great.

Application: A brief discussion with the class will follow, as to whether any other continent will surpass Europe.

The class will be asked to study the *Public School Geography*, pages 160 to 166, at the end of each lesson.

Each pupil will write a short essay telling why Europe is the greatest continent.

CHAPTER VII

LESSON PLANS (*Continued*)

LESSON: THE IMPORTANCE OF HILLS

FORM II

Preparation: What difference would it make in this section if the hills were cut down? The pupils are not sure. The following directions for observations, to be made by the pupils, will be given:

What is the shape of the hill? Which direction does it run? What becomes of the rain that falls on its surface? On what part of the hill is the soil dryest? Where are the houses built on the hill? On which slope of the hill are the plants greenest? On which part of the slope are they greenest? If it is spring, find out on which slope the flowers come out first. What is done to roads passing over a hill to lessen the slope? What uses are made of the hill?

Problem: Of what importance are the hills in the section?

Presentation: After time has been given for the completion of these observations, the answers of the pupils will be received; and the influence of the hill on the neighbourhood is developed by discussion and questions.

MATTER

METHOD

Parts—

Top

Base

Slope

What is the highest point of a hill called? What is the lowest part called? What is the part between the top and the base called?

Effects on drainage—

Water runs off rapidly.

Upper parts well drained.
Base wetter.

Creek is at base of the hill.

Effects on climate—

More of the sun's rays are received on the south side of the hill, and growth is quicker.

The north is more shaded and cooler.

The hill protects the south side from the cold winds, and the north side from the warm winds.

Effects on location of houses—

When built on top, better drainage, wider view, cooler breezes.

When a house is built at the base of a hill, it is sheltered from cold winds, and the soil is better for gardens.

Effects on farming—

Hills are more difficult to till.

Hilly land is easily drained.

What becomes of the rain that falls on the hill?

Why is the grass greener at the base than on the top of the hill?

With the assistance of the class, mark on the map of the school section the creeks, and then ask the pupils at what part of the hill does the creek or river run?

Why do the spring flowers open earliest on the south side of a hill?

The pupils will mark on the map of the school section the position of the houses in relation to the hills, and will then explain on what part of the hill the houses are generally built.

On which side should they be built to protect them from the cold winds?

Why is a house sometimes built on the top of a hill?

The pupils mark the position of the houses, as above.

What are the advantages of building at the base of a hill?

How do hills affect the ease with which land can be tilled?

Which is drained more easily, hilly, or level land?

The soil is washed to the base of the hill, and hence the lower part is more fertile.

Where is the soil most fertile?
Which gives the more even crop, a level or a hilly field?

Effects on transport—

Smaller loads are carried in hilly districts.

What disadvantage is it to have to cross a hill in hauling grain to market?

Roads and railways are more expensive to build.

Why is it undesirable to build a road through a hilly country?

Cuts are made through hills, and they cost a great deal.

Why are roads sometimes built through hills?

Roads and railways are longer when they have to go around.

Why are roads sometimes built around hills?

What is done to make the slope of the road less steep?

BLACK-BOARD SUMMARY

Hills—Parts

Drainage—upper parts
base
position of creeks

Climate— winds and sun on (1) north side,
(2) south side

Homes— drainage
breezes
warmth
gardens

Farming— tilling
drainage
growth

Transport—roads
railways

Application: 1. Write lists of the ways in which a hill helps or hinders.

2. Make a drawing of a hill and its surroundings, so as to show as many as possible of the above features; show houses, a creek, a road, and a wagon-load of hay going up the hill.

3. Have the class make a collection of pictures of hills clipped from newspapers, magazines, and railway folders, and arrange them in groups illustrating the different points taught in the lesson.

THE DRILL LESSON

The drill lesson is sometimes restricted to the repetition of lists of names, definitions, or facts in a certain order, so that they may be fixed in the mind in such a manner that they can be used automatically. For example, when a list of rivers, countries, and capitals, or counties, are repeated time after time, until the pupils can recite them without thinking, it is called a drill lesson.

But drill may have a wider significance. For example, when the great winds of the world have been taught, a good way to make the pupils remember these winds more thoroughly and to become better acquainted with them, is to have a lesson in applying their knowledge about these winds to explain the rainfall and temperature of the different countries of the world.

That a lesson may be taught, and the pupils may understand, is not enough. At the first teaching the impression is not clearly made on the mind, and the facts and their relationship are soon forgotten. But every time the pupils think out the facts again, or better still, try to explain them to somebody else, the deeper and more lasting the impression becomes. For this reason they must be drilled and drilled again on the facts and the applications of the principles of geography.

But there is another great value in the drill lesson. There are degrees in knowing a fact or a principle. Many facts learned in school are known so slightly that the pupil finds difficulty in using them in his reasoning. At first he cannot apply such facts to explain other facts without the greatest difficulty. But each time he uses one of these facts, he gains greater freedom in applying it, until in time he is able to use it almost or quite automatically.

In drill lessons the facts should not be tested in the same way repeatedly, but should be used in a variety of applications, for in this way they become flexible in the pupil's mind. A pupil who has learned as a list the counties on Lake Ontario has not his knowledge in a very usable form. If you ask him where Northumberland is, he probably has to begin at Lincoln in order to locate it. But if he has been drilled on the location of Northumberland in a variety of ways, then he has his knowledge of the location of this county in a usable form.

The drill should also assist the pupil to understand the different parts of the problem in their proper relationship. When in a teaching lesson a series of facts is slowly developed, the mind at first finds difficulty in calling them up in regular order, as it requires an effort to reproduce each part; but as they become more permanently fixed by drill, they can be recalled more readily, and a larger number of the facts can be placed before the mind at the same time. Moreover, because in a drill facts that originally took half an hour to teach are marshalled in a few minutes, their relationship is more readily grasped.

PLAN OF A DRILL LESSON

FORM III: SENIOR

Teacher's Aim: To drill the pupils so that they become familiar with the chief railways of Canada, their routes, chief cities along the routes, and the character of the traffic.

Method: A map of Canada will be drawn on the black-board, with the chief rivers, lakes, and mountains marked on it. There will also be a map of Canada on the wall.

A pupil will point out on the wall map the northern transcontinental line of the Canadian National Railways and indicate its course as follows: On the Pacific coast it begins at Prince Rupert, follows the Skeena and Fraser Rivers to the Rocky Mountains, passes through the Yellowhead Pass, Edmonton, Saskatoon, Portage la Prairie, Winnipeg, north of the Lake of the Woods and Lake Nipigon, across the Clay Belt, through Cochrane, across the Province of Quebec to the City of Quebec, across the St. Lawrence River, through southern Quebec, and diagonally across New Brunswick to Moncton and Truro, terminating at Halifax.

Another pupil repeats this.

Next, let a pupil trace its course without the use of a map. One pupil will draw this line on the map on the black-board with yellow chalk, the pupils directing him where to draw it. He marks small circles to represent the cities through which it passes, but writes no names. Another pupil goes to the black-board map and names the towns marked, pointing to each.

Repeat this, beginning at Halifax.

Treat the second transcontinental line of the Canadian National Railways in the same way, having the class learn the following course: Vancouver, Fraser River, Kamloops, Thompson River, Yellowhead Pass, Edmonton, Saskatoon, Portage la Prairie, Winnipeg, south of the Lake of the Woods, Fort Frances, Port Arthur, North Bay, Ottawa, Montreal, Levis, Rimouski, Moncton, Truro, and Halifax. It will be drawn on the black-board map with blue chalk.

Drill the pupils on these two railways.

Treat the main line of the Canadian Pacific Railway in the same way and mark it in green chalk.

Drill the three railways, by asking several pupils to trace the courses of the roads with and without the use of a map. Vary, by asking such questions as the following:

Through what cities do all three railways pass? Through what Pass does each traverse the Rocky Mountains? What is the western terminus of each? The eastern? Which roads pass through each of the following cities: Montreal, Vancouver, Edmonton, Saskatoon, Port Arthur, Fort William, North Bay, Moncton? Which pass north of the Lake of the Woods—and which south? Which follow the Fraser River for part of their course?

Have the names of important places on these railways, such as Montreal, Banff, Yellowhead Pass, Toronto, Port Arthur, Saskatoon, written on cards, and distribute these to the pupils, giving one to each pupil. The one at the end of the class announces the name on his card, and each of the others in turn announces the name on his card, and tells how to get from the place mentioned on his card to the place named on the other boy's card. Then a second boy states the name on his card, and each

of the others tells how to make the journey from the place named on his own card to the other places.

Seat Work: Have the pupils draw a map of Canada, by tracing, or copying in some other way, and mark on it the Canadian National Railways in yellow, and the Canadian Pacific Railway in blue. Letter the names of the terminals, the Passes by which they traverse the mountains, and the chief cities through which they pass.

REVIEW LESSONS

Review lessons are very necessary at all stages of teaching. The regular review lesson is taught when the geography of a topic has been completed, and there is a distinct break between it and the next topic. For example, when the geography of Canada and its provinces has been completed, a number of review lessons are valuable, in order to bring before the class rapidly the facts learned through a long period. Or perhaps the geography of the chief countries of the world has been completed, and a series of review lessons is taken on the different commodities, such as wheat, rice, coal, or cotton, which have been mentioned many times in treating the various countries. The facts about these commodities which have been already taught are collected in a systematic way, and the pupils' knowledge of these commodities is organized into a unity and is viewed from new standpoints.

Suppose that the geography of British Columbia has been taught by topics that appeal to the interest of the pupils. Lessons have been taken up on the salmon fisheries, a trip down the Fraser River, a visit to a silver mine, irrigation in the Okanagan Valley, and the growth of Vancouver. Then the whole province should be dealt

with in a review lesson. The purpose of the review in this case is not merely to test the knowledge of the pupils on each topic as it was taken in the preceding lessons; but also to organize the different topics already taught into larger groups, and thus to give a more complete correlation of the different topics and a broader and more scientific view of the geography of the region.

After British Columbia has been treated by topics as just stated, the review should deal with the province under such headings as position, coast, surface, drainage, climate, etc. Thus a review lesson will usually add to the knowledge of the subject and not be a mere repetition of facts formerly learned.

REVIEW LESSON: AGRICULTURE OF CANADA

FORM III

Teacher's Aim: The agriculture of Canada has been taken in connection with the different provinces. The pupils should now be led to grasp the outstanding facts about the agriculture of Canada as a whole.

Preparation: Some time before the lesson, the pupils will study the agriculture of the provinces from the text-book. One pupil will find from the *Canada Year Book* the value of the annual production in each industry, another the ten most important agricultural products in the order of their value. To others are assigned special products, such as wheat, butter, beef, tobacco, and apples, about which they are to obtain complete information from the text-book, other supplementary books, and from their parents.

MATTER

METHOD

Productions of Canada—

Farming....	\$1,150,000,000
Manufactur- ing.....	1,130,000,000
Forests.....	266,000,000
Mines.....	177,000,000
Fish.....	42,000,000
Trapping...	17,000,000

One pupil will write on the black-board the value of the productions of the different industries of Canada. By questioning, the pupils will be led to compare the value of agricultural products with those of the other industries, in order that the importance of farming may be seen, and that they may be interested in a further review of the industry.

Agricultural regions—

All of Prince Edward Island
 Northern part of Nova Scotia
 St. John Valley and the east coast of New Brunswick
 Plain of St. Lawrence River
 Southern peninsula of Ontario and the Clay Belt
 Prairies from Lake Winnipeg to the foothills of the Rocky Mountains
 Peace River District
 Lower valley of Fraser River, around Lakes Okanagan, Arrow, and Kootenay
 Southern part of Vancouver Island
 Upper valleys of Fraser and Skeena Rivers

A map of Canada will be drawn on the black-board; and the regions in which the different productions are most important will be marked on the map in chalks of different colours as the lesson proceeds.

Several pupils will be asked the chief farming regions, and a heavy yellow line will be drawn around each area. Then drill, first from the black-board, on these areas, then from the wall map, until the pupils are familiar with them.

Cereals—

Wheat, oats, and barley in all regions, but the two former especially in the Prairie Provinces
 Hay throughout the region, especially in Quebec
 Flax in Southern Manitoba and Saskatchewan
 Potatoes in all regions, but especially in the Maritime Provinces
 Corn in south-west Ontario
 Sugar-beets in south-west Ontario

Review the productions one by one and in the order indicated. The information will be obtained from the pupils, partly by questions and partly by having those who have specially prepared information state the facts.

Each product will be marked on the black-board map in a special colour, and at different stages the products already taken will be drilled, until the class knows them thoroughly.

Tobacco in south-west Ontario and southern Quebec
 Maple sugar and syrup in southern Quebec, New Brunswick, and Ontario

Fruits—

Apples in the Annapolis Valley, Quebec south of the St. Lawrence, Ontario along the Great Lakes, Okanagan and Kootenay Valleys
 Peaches and grapes along Lake Erie and in southern British Columbia
 Small fruits very general, especially in southern Ontario and southern British Columbia

Stock—

Horses in all parts, but especially in the Prairie Provinces
 Cattle in all parts, especially in southern Ontario and Quebec
 Pigs in south-west Ontario, Quebec, and the Prairie Provinces
 Poultry in all parts
 Sheep in all parts

Most important products—

Wheat.....	\$317,000,000
Oats.....	184,000,000
Hay.....	163,000,000
Potatoes....	56,000,000
Fruits.....	33,000,000
Corn.....	25,000,000

Have the pupils put on the black-board the value of the most important crops, as they found them in the *Canada Year Book*. With the help of the pupils represent these graphically.

Finally, have several pupils give a complete account of the production of each group, until they know them thoroughly.

Seat Work:

On an outline map of Canada, either traced or obtained otherwise, have the pupils mark the agricultural regions and the products of each.

CHAPTER VIII

TOPICS OF THE COURSE

FORM I

(The 1926 Course of Study, as issued by the Department of Education, should be followed.)

THE first region which should be studied geographically is the home district. As young children are especially interested in concrete material and delight in seeing plants, animals, and the natural phenomena around them, home geography makes the most direct appeal to them. Their eyes and ears are alert, even though their reasoning is not very active; this is the time, therefore, to have them observe and acquire skill in describing what they see.

There is another reason why a broad, clear knowledge of the geography of the home region, including the relation of natural phenomena to man's activities, as well as man's response to his local environment, should be studied early. Soon the child will have to reach out to the regions beyond his direct observation, and to commercial activities and natural phenomena on a wider and more complex scale than those of his little world. How is his imagination to give these form, to make them real, and to see them as they are, except by interpreting them through something already in the mind?

If he has a clear knowledge of local geography, then it is an easy step to extend his knowledge into larger and more complex fields. If he has studied a stream by walking along its banks and observing the current, erosion, meandering, deposition of sediment, transportation,

bridges, tributaries, and the mouth, he is able, later, to comprehend more clearly the mighty Amazon.

If he has observed the shipping of cattle from the cattle-yard, wheat from the elevator, or pulpwood from the bank of the stream, and the bringing in of goods on the trains, he is in a better position to understand the trade and transportation of Canada, as well as its exports and imports.

The elementary geography, however, should not stop with describing the home district. Children should not be left with the impression that all people live in the same way as the pupils. After they have learned how the people in their neighbourhood live, work, and trade, they should be taught that in other parts of the world there are people who live, work, and trade in a very different way. By this knowledge their sympathies broaden, their interest expands, and they will have an eager desire to learn more about other countries.

The teaching of the topics of the course will now be discussed.

DIRECTION

First Problem: How would you find your way if lost in the woods?

For a lesson on this topic see Chapter VI.

Second Problem: How could you find your direction when the sun is not shining?

Method: Place a pocket compass on the floor on the north-south line, and let the pupils note the direction in which it points. Turn it around to let them see that it still points in the same direction. Then ask them to put it on their north-south lines on the window and notice the direction, and also test it on the lines in the school yard. Call their attention to the fact that one end

of the needle is dark and the other light. Show them the structure of the needle, namely, a steel needle balanced on a pivot, and then let them tell how they could find their direction in the woods with the compass, when the sun was not shining.

After the four chief points have been taught, north-east, north-west, south-east, and south-west are taught and drilled.

As home observations each pupil should find the north-south line by means of a shadow, and find the direction of many important objects around his home, as, for example, the direction in which the front of the house runs, the side, the lane, the road near the house, and the direction of the barn, the school, and the village from the house. He should also notice and report to the teacher the different directions in which he walks in going from his home to the school.

The purpose of the drill is to train the pupils to notice that directions are not confined to any one spot, for instance, the school, but are the same everywhere, and to give them such a drill that they can immediately indicate any direction no matter where they may be, provided they can find the north.

Since the sun rises in December nearly in the south-east and sets nearly in the south-west, and in June rises nearly in the north-east and sets nearly in the north-west, the great error of teaching that the sun rises in the east and sets in the west is apparent, and is sure to lead to confusion later in life when the pupil becomes more observant.

TIME

Problem: How can you tell the time?

Without a clock—On a sunny day let the pupils stick a hatpin vertically in a south window, and on a

piece of paper fastened under it mark the shadow at nine o'clock and at every hour until four o'clock. Leaving the paper and pin in position, have the shadows marked at the hours for several successive days. From this experiment the pupils learn that the sun moves across the sky uniformly, and that it could be used as a clock.

With a clock—Teach the meaning of day—namely, that it is the time that elapses between two successive positions of the sun straight south of us. Next, discuss the divisions of the day into daylight and darkness, and of the daylight period into morning, noon, and afternoon. Show the necessity of having a more exact division of time. Then tell the pupils of the division of the day arbitrarily into twenty-four equal divisions called hours. Show how the clock is used to tell the time. With a clock face made of cardboard or with an alarm clock in which the hands can be turned easily into any position, drill the class thoroughly until they can all tell the time.

For home work have each pupil on Saturday repeat the experiment of marking the position of the shadow of a vertical hatpin at the hours of eight, nine, ten, etc., and let it be repeated on the following Saturday.

Next, teach that the days are combined to make up weeks and months, and the months to make up a year. Teach also the names of the days of the week and of the months.

WEATHER

Problem: How could you find out what kind of weather we shall have to-morrow?

Method: Begin by keeping on the black-board a record of the weather for a month. Every afternoon the children are questioned about the temperature, sky, rain, and wind. They state whether the air is very hot, hot,

cool, cold, or very cold; whether the sky is clear, partly clear, or cloudy; whether it is dry or rainy, whether it is calm or windy, and if the latter, the direction of the wind and whether it is light, moderate, or high.

Devices may be used to increase the interest of the class. For example, a magnifying glass may be hung in a south window. To find out whether the sky is clear or cloudy, a piece of paper is held steadily behind the glass at the proper or focal distance. If the paper takes fire the sky is clear; if not, cloudy. The strength of the wind can be judged by its effect upon some tree near the school. If it does not make the leaves rustle, it is calm, if the leaves just rustle, it is light, if the branches sway, it is moderate, and if the trunk sways, it is a high wind.

The representation on the black-board may be in words or by drawing. An umbrella up means rain, one down means dry weather, a boy with an overcoat on means cold weather, in his shirt sleeves means hot, etc.

Each day, when the weather is being recorded, have the pupils study the correlations between the elements. When it rains, have them notice the direction of the wind on that day and on the preceding; when it is cold, have them notice whether the sky is clear or cloudy and the direction of the wind. Have them notice the temperature, etc., when the wind is from the south.

At the end of a month see how far the problem can be solved.

The following conclusions in all probability may be drawn:

1. After east winds it is often cloudy followed by rain.
2. Before and during rain the sky is cloudy.
3. When the wind is south, the weather is warm.

4. When the wind is north-west, the weather is cold, and the sky is clear.

SEASONS

1. The observation of the sun and the study of the seasons should be taken together. The first observations of the sun should be made not in a formal lesson, but incidentally from day to day. Some clear day ask a pupil to point to the sun at nine o'clock, and notice how high it is in the sky and in what direction he walks in going toward it. Notice its position again at ten o'clock, twelve o'clock, two o'clock, and four o'clock, and ask each of the pupils to notice where it rises and sets. Let them also notice when is the hottest time of the day. Let this be done for several days, until they are thoroughly familiar with the sun's rising, motion across the sky, and setting, and with the fact that it is hottest when the sun is highest.

2. Let the pupils observe the sky on a cloudy day, and notice that the sun cannot be seen because a cloud comes between the observer and the sun, and that we get less light and heat when it is shaded by a cloud.

3. They will notice that it is cooler at night than during the day when the sun is shining.

4. Suppose the season when the observations are being made is October. Discuss with the pupils the activities carried on during this month.

- (1) The sun rises after six in the morning and sets before six in the evening, so that we have only about ten or eleven hours of sunlight.
- (2) Plants have almost ceased growing, and many are killed by the frost. The leaves on the trees have changed colour and have fallen off.
- (3) The grain which was cut in the fields in August

and September is now being threshed. The potatoes are being dug, and the apples, pears, and grapes are being picked.

- (4) There are many cloudy days and much rain.
- (5) The days are becoming cooler and the nights much colder, and often there is frost.
- (6) Many of the wild flowers have grown thick roots stored with food ready for spring.

Teach the class that this season is called fall or autumn.

5. In a similar way let the class examine the sun in January and discuss with them the characteristics of winter: The sun rises late and sets early, rises near the south-east, sets near the south-west, and does not get high in the sky at noon. Describe the activities of the people of the neighbourhood during this season, the means of transport, the weather, the effects of snow as a protection to vegetation, and the character of animal life.

6. Deal with spring and summer in a similar way.

During these lessons the teacher should show the relation of temperatures to the duration of the daylight and the height of the sun in the sky.

Caution. Do not teach the pupils that the sun is directly overhead at noon, since in Canada, which is far beyond the Tropic of Cancer, the sun never gets directly overhead, but is always to the south at noon.

THE MOON

Observations of the moon. The most of these observations must be made by the pupil at home, and very definite instructions should be given by the teacher. Ask the pupils about two or three days after the new moon (found from the almanac), to observe the moon

as to its shape, position in the sky, and the direction in which its horns point. The next morning question them on what they have seen. Make nine squares on the black-board, and in the first draw a picture of the moon as it was seen in the sky, and put the date above it, and the part of the sky in which it was seen (south-west). Every third evening have the pupils repeat their observations and make the drawing in the proper square. Toward the end of the month have them look for the moon during the day, and compare its shape and position with its shape and position during the preceding night.

At the end of the month take a formal lesson on the moon, in which the following facts may be taught:

1. The moon gives light at night, but is not so bright as the sun.

2. It is about twenty-eight days between two successive new or full moons.

3. The new moon is in the shape of a crescent, and for two weeks it is filling out, so that at the end of the first week it is half a moon, and at the end of two weeks a full moon. The full moon dwindles, so that in still another week it is again a half moon, and in the fourth week it is again a new moon.

4. The new moon appears in the west and the full moon in the east.

SIMPLE OBSERVATIONS OF THE ACTIVITIES OF THE NEIGHBOURHOOD

The method of conducting the observations and their nature depend on the character of the district and will vary in different regions. For example, in a city the observations will be very different from those made in a village, and those of a village will differ from those made on a farm.

The study may be begun by the solving of the following problem:

Which persons do important work in the village? Have each pupil find out what his father works at, and a list of the occupations is written on the black-board next day as follows: Farmer, store-keeper, minister, school-teacher, doctor, blacksmith, farm labourer, station-master, clerk in store, postmaster, insurance agent, sawyer, fisherman, miller, butcher, tailor, and book-keeper. The work done by each of these is discussed in class, until each pupil understands the kinds of activity.

STUDY OF AN ACTIVITY

In dealing with the farmer, the class, if living in a village, should visit a farm with the teacher or with one of the pupils. The following is an outline of what is taught about the farmer and his work:

1. He arranges his farm.

It fronts on a road for the convenience of transport.

The fields are separated by fences. Why?

The lane and its uses.

The position of the house, and the reason it has this position.

2. These crops are grown in the fields by the farmer:

Wheat, oats, barley, hay, potatoes, turnips.

(1) The uses of each kind of product.

(2) The destination of each kind of product:

(a) Some are used for feeding on the farm.

(b) Some are sold locally or exchanged.

(c) Some are shipped.

3. He raises live stock.

4. The farmer helps the other people in the district, because he supplies them with food and clothing materials.

Others help the farmer.

The store-keeper, station-master, blacksmith, tailor, teacher, minister, all help him. How?

Each of the other occupations in the neighbourhood is discussed in the same manner, the pupils taking the lead in giving the information. Concrete material, such as pictures, tools, materials produced, and processes, will be used to illustrate the discussion.

Then lead the pupils to see that each worker is dependent on the others, and that all classes of workers are important.

Next, an attempt should be made to classify the workers into groups, such as:

1. Producers—farmer, farm labourer, blacksmith, sawyer, miller, fisherman.

2. Distributors—store-keeper station-master, book-keeper, clerk, postmaster.

3. Those who help the workers—school-teacher, minister, doctor, lawyer.

Then the products of the neighbourhood can be classified as products of (1) farm, (2) forest, (3) water, (4) factory.

PLANT AND ANIMAL LIFE OF THE NEIGHBOURHOOD

This part of the course is in reality a combination of geography and nature study, and there is no good reason why the geographical and natural history facts about these plants and animals should be separated. The method of obtaining the information is the same in both, namely by observation; the facts themselves are very closely related, and it is of advantage to keep the centre of interest in the plant or animal itself, which makes a strong appeal to the pupil. As the geographical side of the study of these animals is in most cases less extensive

than the nature study side, they will be taken up fully in the Manual on Nature Study.

THE HORSE (A GEOGRAPHICAL STUDY)

Problem: Why is the horse useful to man?

Presentation: The following geographical information should then be discussed in class:

1. Qualities that make the horse useful to man:

- (1) Great strength
- (2) Fleetness of foot
- (3) Power of endurance
- (4) Great intelligence
- (5) Gentleness
- (6) Easily trained.

2. Uses of the horse:

(1) Moving loads: Almost every article is transported on some part of its journey by horses:

- (a) In wagons where there are roads,
- (b) On horseback where roads are bad, or on trails through woods and over mountains or other rough places. Teach the class that the horse is sure-footed on rough mountain paths.
- (c) On sleighs through snow where automobiles and wagons cannot go.

(2) Working on the farm:

- (a) Ploughing and harrowing
- (b) Cultivating
- (c) Harvesting

3. Food of horses:

- (1) Grass in the pasture field
- (2) Hay and oats

Conclusion: There will always be uses for horses.

The dog, cat, rabbit, hen, duck, and pigeon may be taught in a similar manner.

CHAPTER IX

TOPICS OF THE COURSE

FORM II

(The Course of Study, as issued in 1926 by The Department of Education, should be followed.)

THE teaching in the Second Form, as in the First, should be based largely on observations by the pupils. But now the descriptions will be more complete and the observations more detailed, exact, and extensive. The explanation of relationships will now be introduced in a gradual way, though the description of what is seen forms the main part of the work.

Home geography still holds the field to a large extent, but the teaching of the relation of the home to other parts of the world is begun; so that before the year has been completed the pupils have been taught that there are a number of great continents separated by great oceans, and that these other parts of the world are inhabited by peoples very different from ourselves. This is the most difficult part of the work, as it is a big jump from the school section in which the pupils have in most cases spent their whole lives, to continents and oceans. The teacher cannot hope to give them a clear conception of the vast extent of the continents.

However, it is necessary, in order to understand the home district, that the pupils should have some knowledge of foreign countries, for many of the people in each district have come across the ocean from these countries, a very large number of the commodities that are bought in the stores are produced in other countries,

and many of the products of the farms and factories of the region are shipped to foreign countries. Thus, to understand our own community, we must know something about other parts of the world.

As the pupils become able to read readily, greater use can be made of the black-board for summaries and explanations. The pupils can write answers to test questions, and can make much greater use of supplementary reading. Thus they will extend the knowledge learned in class.

LAND FORMS AND WATER FORMS

The surface of the district in which the pupils live is continuous, yet it presents certain diversities, such as hills, valleys, rivers, lakes, forests, and marshes. None of these are isolated from the others, but one passes into the other—the hill into the valley, the valley into another hill, the forest into a marsh, and the marsh into a lake.

The custom of learning the mere definition of such land forms as rivers, lakes, hills, capes, bays, etc., cannot be too strongly condemned. In the first place, these are not technical terms used in a rigid scientific sense, but common words used in a loose way.

The memorization of definitions and the testing in examinations give to definitions an importance far beyond their worth. This is only learning the meanings of words. At the beginning of the study of history the teacher does not drill the class on definitions of terms like law, king, treaty, parliament, and ministry, nor in English on definitions of poetry, word, prose, and paragraph. There is no more reason why it should be done in geography. Geographical terms should be explained as they occur in the work, as is done with terms in other subjects.

Moreover, the definition of a term is often of very little importance. If the reader will turn to the description of the method of teaching a hill in a previous Chapter, he will see how rich in geographical importance a hill is to its district, and what meagre knowledge a pupil receives who learns only the definition.

The land and water forms studied should be those within the experience of the pupils. Plains, hills, valleys, ponds, rivers, islands, swamps, and forests will be accessible to almost all. Lakes, waterfalls, bays, peninsulas, isthmuses, and capes will be accessible to some; but volcanoes, glaciers, oceans, and deserts will be accessible to no one in Ontario, and will not form a subject of study in home geography. These may well be left until later, when regions in which they occur are studied, and their appearance, meaning, and geographic significance can then be discussed.

STUDY OF A RIVER

A SERIES OF OBSERVATION LESSONS

Step I: The study of a river should be based on the observations of the pupils out of doors, and experiments and discussions. The first observations should be made after a heavy rainstorm. Then little streams can be seen on the roadside. These have a great advantage over larger streams, as they can readily be followed from the source to the mouth. The following phenomena should be observed:

1. The water is flowing from a higher to a lower level.
2. Where the water is shallow, the current is swifter than where it is deep.
3. Where the stream is narrow, the current is swifter than where it is wide.

4. Where the slope is steep, the water is shallow, and the current is swift and forms rapids.

5. Where there is a vertical or nearly vertical ledge, the water goes over in a waterfall or cataract.

6. The stream does not flow straight, but turns from side to side. The reason for this winding can be seen to be due to unequal hardness, etc.

7. The water is often muddy when the current is strong.

8. Little stones and sand can be seen moving along the bottom.

9. Where the stream widens into a pool, the current slackens, and fine sand is deposited at the mouth of the stream; this is a delta.

10. Where the stream passes around a curve, the current is swifter on the outside than on the inside of the curve.

11. On the outside of the curve the water is deep and the bank steep, while on the inside of the curve the water is shallow, sediment is in the bottom of the stream, and the bank is very low and gradually slopes upward.

12. Small streams empty into the larger ones.

13. Each stream becomes larger as it advances, owing to the addition of water from its tributaries.

14. Adjoining streams are separated by a ridge lying between them.

Draw a line around the region whose surface drains into one little stream. Do this for several adjacent streams. This gives the class the idea of river basin and divide or watershed.

Let each pupil collect a bottle of water from the roadside stream and place it aside until the next day. Then let him examine the bottle and notice that there is a layer of sediment in the bottom. Each bottleful of

water that flows down the stream carries as much sediment as is observed in the bottle. Lead the pupils to understand from this the immense quantities that are carried down even by small streams, and thus to realize the immense amount of erosion effected by streams.

Ask each pupil to break up at home a soft stone (a brick will do) into pieces about the size of beans, wash, and divide them into two equal parts. Put them into two bottles half filled with water. Cork the bottles, set one aside, and shake the other for half-an-hour. The pupil will shake it for a few minutes at intervals. The pupils will bring the bottles to school and compare the contents of the shaken and unshaken bottles. Two facts will be noticed:

1. A heavy layer of sediment is in the bottom of the shaken bottle, and no sediment is in the unshaken bottle.

2. The sharp points are worn off the pieces in the shaken bottle, and they are somewhat rounded, but in the unshaken bottle the pieces are still jagged.

Question the pupils as to the cause of the difference. Stones knocking together grind one another into sand. Remind the pupils of the stones that they saw moving along the bottom of the stream, and lead them to see that these stones are worn down by rubbing against the bottom and against one another, and they also wear away the bed of the stream even if it is made of rock. From this example lead them to understand erosion.

Next, the pupils will find a creek in which there is a rapid current, and bring to school pebbles picked from the bottom. Sometimes they may find a piece of brick or glass among the pebbles. The pebbles, as well as the glass and brick, will be more rounded and smooth-edged than the stone in the shaken bottle, because they have been

moving about on the bottom, not for half-an-hour, but for years perhaps.

Step II: Now that the pupils understand the phenomena in a small rivulet, have them go to a creek or river in the neighbourhood and examine as many as possible of these phenomena on a large scale. This is an excellent investigation to be carried out on a school excursion.

Step III: Study the effect of the local stream or river on the people.

Let the pupils by observation and discussion find answers to the following questions:

What effect has the stream on roads that run at right angles to it? What relation has it to the floating of logs to the saw-mill, to the running of the saw-mill, to the transporting of goods in boats, to the water supply for the people and the stock, to fishing, and any other local condition peculiar to the neighbourhood.

Its importance to the people in the drainage of their land should be stressed. Each pupil should trace, if possible, the water drained from his farm or lot as far as he can; first into furrows in the field or tile drains underground, next into a ditch, then into a ditch at the side of the road, and, finally, into the stream. Have him notice that in its progress it is always flowing to lower levels. Perhaps some time a drain will become blocked, and the water will be dammed back. This gives an excellent opportunity to see the importance of these ditches and streams in draining the land.

In teaching this topic, such terms as current, right bank, left bank, tributary, mouth, source, river valley, river basin, and watershed are taught, but merely as any other words are taught when dealing with other topics.

The whole teaching should not dwell upon these terms, but rather upon the real geography of the river.

The other land and water forms taught will depend on the neighbourhood, as only those that can be observed by the pupils should be taken at this stage. The methods of dealing with them should not all follow the same groove. The more variety introduced the better. Many can be discussed and examined with most interest as problems. The following problems are suggestive of how to deal with some of these land and water forms.

PROBLEMS

Would it be better for the district if the hill were absent?

How would the district be benefited if the marsh were drained?

What changes would be produced in the section if the big forest were cut down?

How would it affect the farmers if the country were flat?

Which is more valuable to the people, a lake in the neighbourhood or a level plain?

Why did the first road in the district run along the gravel ridge?

A CLASS PROJECT ON LAND AND WATER FORMS

1. Let the class make a collection of the different kinds of rocks found in the district. These may be classified by the teacher and the pupils in some simple way, as hard or soft, layered and unlayered, or limestone, sandstone, etc., and the uses of each discussed.

2. The class and the teacher make a survey of the land and water forms of the school section and represent

them on a map. Each pupil finds from his father the size of his farm, and where it is highest, where lowest, the slopes, the situation of any creeks, marshes, swamps, ponds, woods, also whether the characteristics of the land are sand, clay, gravel, or muck. These the pupil inserts in a map of the farm which he draws. Then the teacher and the pupils together make a map of the whole section and combine the details of the pupils' maps in the larger one. Such a project should be worked out gradually and may be done little by little through several weeks. Each pupil may also be asked to model in clay or plastiline the surface features of his farm.

In towns the map of the town may be worked out in the same way.

INTERPRETATION OF A MAP

In order that the Second Form may understand the structure of a township, it is necessary that a map of the township should be drawn, showing its division into concessions and lots. Before taking this topic with the pupils, a brief lesson on a map should be given. Show them that if a drawing of the floor of the school-room is to be made, it cannot be drawn full size. Measure its dimensions with a yard stick. Then draw a line on the floor in the direction of one side, and have a pupil mark off on the line an inch for every yard of the length of the room. Do the same for all the sides until a plan of the floor is drawn. By questions lead the pupils to see that this drawing is the same shape as the floor, only very much smaller.

Next, draw on the floor, in a similar manner, the plan of the school grounds. Mark on it the north, south, east, and west sides. Next, show the pupils how such a drawing is made on the black-board. Which side will be

placed toward the top? Which toward the left? Tell them that it has become the custom always to place the north side of such a plan toward the top. Then give them practice in drawing simple maps of their desks, homes, and the school section on their books. With this preliminary introduction, they will be in a position to understand the map of the township, county, or city.

A great deal of the information about the divisions of a township, county, or city can be taught by solving the following problem:

How is the position of your farm or lot determined?

By questions lead the pupils to see that the farms or lots must be numbered from a fixed starting line, that the lots originally were all of the same size, that the front and back lines are at certain distances from the fixed line in front, that these various lines were found by the government surveyor and are the lines from which the boundaries of all lots or farms are measured. Then the teacher should introduce the terms town-line, base line, concession, and side road, the numbering of concession roads, and also of lots.

If possible, direct the pupils to one of a surveyor's stone markers, and impress on them the importance of the marker.

Draw a map of a model township showing the lots and concessions numbered, and drill the class in locating various positions in the township in terms of lots and concessions.

The villages, streams, and railways are now marked on the map, as well as any other well-known features, the technical symbols usually used on maps being taught and inserted on the map. Again the pupils are thoroughly drilled on the township; and the roads to the church, to

the railway-station, to the town hall, and to the different villages are pointed out on the map. The teacher must constantly keep the idea before the pupils that the map represents a real region, and in the map they must always visualize the region. For this purpose he should train them through such exercises as the following:

1. Let a pupil state how to go to different places in the township, stating the distance and direction on each road, and then let him trace these on the map.

2. From the map find the direction of different places from the school, and then point in the actual directions in which the places are situated.

3. From the map trace the roads to a certain village. Then let a pupil tell without the map how he would go to the village, using his finger to indicate the directions he would take.

In a similar manner deal with the county, and give a thorough drill on the relation of the different places in the county, and also the relation of the map to the real county.

Later, in order that the pupils may know that there are other methods of surveying land, the method of division of a township into sections as it is done in Northern Ontario and in Western Canada should be explained to them.

MODELLING AND DRAWING

Modelling is used for two purposes:

1. In teaching land and water forms the teacher may represent them by models, but usually it is far more satisfactory to take the class to see the real objects themselves or to have the pupils observe them individually.

2. After a land or water form has been taught, the

pupils are given plasticine or sand on a sand table and are allowed to express their idea of the form. The latter use is much the more valuable.

After the school yard has been measured, the surface should be studied, the highest point noted, and the slopes described. Then the pupils should be allowed to make a model of its surface showing these features. After a stream in the locality has been examined and discussed, the pupils should model the river valley with the stream and its tributaries. In a similar way other land and water forms should be modelled.

ESTIMATION OF DISTANCE

In connection with map drawing, it is of great importance that the pupils should learn to judge distance. First give them practice in measuring distance with a ruler, to gain some idea of the distance of an inch, a foot, and a yard. Then have them put away their rulers, and first estimate the following distances and put them in the second column, and then measure the same distances and put the measurements in the third column.

Tabulation of results	Estimated distance	Measured distance
Length of page in Reader.....		
Width of page in Reader.....		
Length of desk.....		
Width of desk.....		
Width of aisle.....		
Distance from the top of the desk to the floor.....		
Length of longest finger.....		

Abundant practice in such estimations should be given from time to time throughout the course in Geography. Next, longer distances, such as the length, width, and height of the room are estimated and measured. Finally, estimation of distances in the school yard, on the road, and on the farm are practised, until the pupils become proficient. They should also be taught to measure distances by pacing.

COMMON PHENOMENA OF THE WEATHER

Each member of the class should begin by keeping a record of the weather for at least a month, and it will be better to keep it for two months—September and February. In the First Form the record is kept on the black-board; in the Second Form it is kept by each pupil in a suitable note-book, and more exact and detailed knowledge is recorded. The following model may be followed:

Date	Hour	Temp.	Direction of wind	Strength of wind
Sept. 1	9 a.m.	65	SE	light
" 2	4 p.m.	70	SE	moderate
" 2	9 a.m.	50	NW	none

Sky	Rain or snow	Time of rain	Dew or frost	Forecast in newspaper
cloudy	heavy rain	began in night	none	
cloudy	rain			
clear	none	stopped during night	light dew	

These observations are made at school on the five school days of the week, and by the pupils at home on the

other days. It is very important to have a continuous record.

Temperature—There should be a thermometer in the school, and the temperature should be recorded in degrees. It should also be recorded as warm, mild, chilly, raw, cold, or very cold.

Direction of wind—This is recorded by using one of the eight directions: East, north-east, north, west, north-west, etc. Caution the pupils that they name the wind by the direction *from* which it blows. An arrow going with the direction of the wind can be drawn alongside as a visual picture of the direction.

Strength of the winds—The following descriptive words are used:

Calm, when there is no wind. The smoke from a chimney goes straight up.

Light, when the leaves of trees move.

Moderate, when the twigs and small branches of trees move.

Brisk, when large branches sway and dust blows up.

High, when the trunks of trees sway.

Cloudiness—The following words may be used:

Clear, when only a small part of the sky is covered with clouds.

Partly cloudy, when more than half of the sky is covered with clouds.

Cloudy, when almost all the sky is covered with clouds.

The condition of the sky may be represented by a circle, with the fraction of the sky that is cloudy made black and the rest white.

Rain or snow—Not only the fact that it is raining or snowing should be recorded, but also when it began and

when it ceased, and also whether light, moderate, or heavy.

Dew or frost—Look early in the morning for the dew or frost on the grass in an open space, and state whether it is heavy or light.

For the first few days the teacher and the class make the observations together, each pupil copying them into his note-book. After that the data are not taken in class each day, but the pupils make their records, and the teacher occasionally inspects the books to see that they are all doing the work systematically.

The results of the observations can be taken up under the problem, How are people able to forecast the weather?

As seat work ask the pupils of Form II to write of the ways in which the weather affects (1) the way in which men clothe themselves, (2) work on the farm, (3) transport on roads, railways, rivers, and lakes, (4) recreation and health, (5) household expenses, (6) a person's feelings.

A discussion of these results will show how the weather influences everything man does, and, therefore, it is of great value to be able to forecast it.

Next, the results of the observations are carefully analysed. From these records the following questions should be answered:

How many days did the wind blow from each of the eight directions? How many days was it east, north-east, or south-east? How many days north, north-east, or north-west? Ask similar questions for south and east. Which is the more common direction of the wind?

On how many days was there rain or snow?

What was the direction of the wind on each day that it rained or snowed? What is the usual direction when it

rains or snows? When the wind blows from the east, what kind of weather will there be? What was the direction of the wind the day after the rain or snow storm? What is the most common direction of the wind after rain or snow?

Pick out the ten warmest and ten coldest days. In what direction was the wind on each of the cold days? On each of the warm days? What wind is most common on cold days? On warm days?

On each day with a clear sky what was the direction of the wind? What is the commonest direction of the wind on clear days? What was the direction of the wind on each day when it was cloudy? What is the commonest direction of wind that accompanies a cloudy sky?

By a study of the answers to the preceding questions, develop the relationships existing between each one of the following: Wind, temperature, cloudiness, rainfall, and what is called weather.

Ask the pupils to try for several days to predict from the weather conditions of the day what the succeeding weather will be like.

Other phenomena of the weather should also be carefully observed.

Dew—The pupils for two weeks in September, May, or June, will observe the sky, wind, and dew, and tabulate the results as follows:

Date	Sky	Strength of wind	Dew next morning
May 8	clear	calm	very heavy
May 9	clear	brisk	none
May 10	clear	light	light
May 11	cloudy	brisk	none
May 12	cloudy	calm	none

The sky and the wind are to be observed in the evening, and the dew the next morning.

Now draw attention to the fact that when it is either cloudy or windy there is little or no dew, but on clear, still nights the dew is heavy.

Next, ask the pupils to observe on what kinds of objects dew collects, by examining early in the morning the following objects: Grass in the open, grass under a tree, leaves of a tree, a stone, a piece of iron, wood, dust on the road, a piece of white paper, a piece of wood painted half white and half black, all of these objects being in an open place. The pupils from these observations learn that dark objects collect dew better than light ones, and poor conductors like stone better than good conductors like iron. On a clear night let them put a tin pan bottom side up in the open on the grass, and observe in the morning whether there is more dew on the inside or on the outside of the dish.

Clouds—Give the pupils the following observations to make about clouds: Make drawings of four different shapes of clouds which you see in the sky. Compare the direction of the motion of clouds with that of the wind. Watch a cloud carefully to see if it changes its shape. Do clouds or parts of clouds sometimes disappear? What colours have clouds other than those near the setting sun? What is the colour of clouds when they entirely cover the sky? What is the colour of a cloud from which rain falls? If the teacher has a set of pictures illustrating the different forms of clouds, it should be pinned up in school, and the pupils should be encouraged to try and find the different shapes.

Fog or mist—On a foggy morning have the pupils observe whether the land or the water is the cooler, and whether the fog is chiefly over the land or over the

water. What causes it to disappear? How does it affect objects?

Rain—The pupils will make the following observations: In spring or autumn how long does a rainstorm last? What is the direction and strength of the wind? How large are the raindrops? In what direction do they fall? Account for the fact that they do not come straight down. What colour is the sky during a rainstorm? Why cannot the sun be seen? What kind of weather follows a rainstorm of this kind?

In summer how long does a thunderstorm last? What time of the day does it usually occur? What kind of weather precedes it? What kind of clouds are seen before the storm? From what direction does it come? How does the rainfall differ from the usual rainstorm of spring or fall? What is the character of the wind? From what direction does it blow? What kind of weather follows the thunderstorm?

Such a set of questions should be answered immediately after a thunderstorm occurs.

Observations of a similar character on snow hail, and the rainbow should be made.

THE SEASONS AND THEIR GENERAL CHARACTERISTICS

This topic has already been taught in the First Form; now it should be reviewed, the characteristic activities of each season should be more closely related to the climatic conditions, and the observations of the position and movements of the sun should be more thorough and detailed.

In September, December, April, and June the following observations should be made:

A flagstaff, fence post, or other vertical pole should be used for obtaining the sun's shadow. The length of

the shadow at 9 a.m., 12 m., and 3 p.m., should be measured; and from observation or the almanac the date of the rising and setting of the sun. These should be recorded as follows:

Date	Length of shadow			Sun rises	Sun sets	Hours of sunlight
	9 a.m.	12 m.	3 p.m.			
Sept. 21	10'	6'4"	10'2"	6.01 a.m.	6.02 p.m.	12 hours
Dec. 18	...	...	...	....	....	....
April 21	....	...	...	....	....	....
June 21	...	...	...	....	....	....

After the pupils have made the above observations for September the twenty-first, they should be taught the relationship between the length of the shadow and the altitude of the sun, and the relationship between the altitude of the sun and the intensity of the heat.

When the December observations are complete, compare them with those of September, and show the pupils that September is warmer than December because the sun shines for a greater number of hours and because it shines more nearly vertically. Owing to the same two causes, the temperatures of the different seasons are explained.

CHAPTER X

LOCAL INDUSTRIES AND THEIR PRODUCTS

FORM II (*Continued*)

HOME activities should be reviewed as learned in the First Form, and then the different industries should be dealt with more fully. As many as possible of the local industries should be visited, such as a creamery, cheese-factory, elevator, flour-mill, saw-mill, planing-mill, railway station, steamboat, greenhouse, grocery store, blacksmith shop, and garage. After each is visited and the observations made, the industry should be further discussed in class. The observations on a saw-mill have already been given in Chapter IV.

A RAILWAY STATION: OUTLINE OF LESSON

Problem: Why is the railway station important to the village?

Observations: Instruct the members of the class to visit the station in the neighbourhood and make the following observations:

What are the chief rooms in the station? What is the use of each? Make a list of commodities seen from time to time in the freight shed, the express office, and the baggage-room. How close does the platform extend to the track? Why? How high is the platform above the track? Why? Find the cattle yard. What arrangements are there for loading stock upon the cars? Describe all the kinds of cars seen on the tracks, and observe the use of each kind of car. Copy the printing on the

outside of the cars and find out its meaning. Find out the number of trains that pass through the village each day, where they come from, and what they carry. How many roads come to the station? Notice the commodities that are coming to and going from the station. Find out all you can about the origin and destination of these commodities.

Class lesson: These observations are discussed in class, after they have been made by the pupils and their geographical significance indicated.

The following is a summary of the facts taught:

Passengers buy tickets at the ticket office and travel in the passenger coaches. A conductor, aided by a trainman, is in charge. There are sometimes dining-cars and sleeping-cars. (Pictures of these should be shown to the pupils.)

Baggage, consisting of trunks, valises, and personal luggage, is carried in a baggage-car attached to the passenger train. Valuable articles or articles easily and quickly destroyed are carried in the express car. Such articles are carefully handled and go only on fast trains, called express trains.

Mail is carried in bags, usually on the same car as express, and a mail-clerk sorts it.

Cattle, horses, pigs, and sheep are carried on stock cars, which have openings in the sides and usually troughs for feeding and watering the stock. Packages, machinery, and grain are carried in closed cars called box cars. Oil is carried in large iron tanks, called tank cars. Cordwood, pulpwood, lumber, and large machines are carried on flat cars, which have only a floor.

Other methods of shipping commodities:

By wagon, automobile, or steamboat.

Advantages of the railway for transport:

1. It is usually cheaper than other methods.
2. It is much more rapid, which is of great advantage, especially for perishable goods.
3. It is available at all seasons.

How the railway helps the village:

1. It may increase the population, as the station-agent, section men, and others live in the village.
2. It attracts people to the village to trade.
3. It is a great convenience for the people of the village in travelling, and in shipping their products.
4. It makes outside goods cheaper to buy, and the products of the neighbourhood become more valuable.
5. It increases the number of commodities on sale in the village. Many perishable and expensive goods would not otherwise be brought in.

COMMODITIES USED LOCALLY

Besides the topics mentioned in the preceding list, lessons should be taken on the chief commodities used locally. These may be divided into food, clothing, and building materials.

The following list of topics should be made the subject of lessons:

Foods—Bread and other wheat products, milk and milk products, rice, fruits, nuts, cattle, poultry, fish, oils used as food, coffee, tea, cocoa, spices, sugar, water, and the water supply.

Clothing—Cotton, linen, silk, wool, fur, leather.

Building materials—Lumber, brick, stone, cement, plaster, paint, iron, glass.

Heat and light—Wood, coal, oil, gas, gasoline, electricity.

Machines—Stoves, automobiles, wagons, agricultural implements.

These topics should be treated in different ways. First of all, the pupil should learn as much as possible about each by observation, inquiry, and reading. By a careful observation of many of the articles, a good deal can be learned about their structure. From the container of many articles can be learned where they are made, and often other information as well. Indeed, a collection of labels taken from packages, boxes, tins, and wrappers can be made the basis of very interesting teaching. There is no better method of introducing pupils to the location of places on maps.

The pupils have already learned the significance of a map of the county; and in treating these topics free use should be made of the maps of Ontario, Canada, and the World, for locating the origin of the commodities we use and the destination of the commodities we produce. The place of production, how the commodity is brought to us, its use and value, and, in some cases, the method of production, may be taught.

As the pupils are taught that tea comes from India, raw cotton from the Southern United States, fruits from California, coffee from Brazil, and cocoa from the Gold Coast, a few details about the differences between the climates, peoples, modes of life, and other features of these regions and Ontario should be taught, in order that the pupils may get an inkling of various regions of the world differing in climate.

PROBLEMS

The method of treatment should be the problem as often as possible. A few are suggested:

How is it that we are able to get fresh fruits in winter?

Which is more important, wheat or milk?

Why is it that in Ontario we now burn chiefly coal, though formerly we burned wood?

How shall we manage when the forests are all cut down?

Three hundred years ago in England no sugar, tea, coffee, cocoa, rice, or potatoes were used. If we were without them, what could we use in their place?

What are the materials used in building the houses of the village, and why were the various materials used?

Make a list of the chief articles bought in a grocery store, tell how each is packed, and why it is packed in that way.

Why can we get water by digging wells?

Why is cotton more common than linen?

Which could we do without with less inconvenience—animal or vegetable products?

The early pioneers in Ontario obtained all their food, clothing, building materials, and fuel from their farms. How were they able to do this, and what necessities did they have to buy?

If only one domestic animal could be retained, which would you choose?

LESSON OUTLINES

The method of treatment of a few of the preceding topics will be explained.

WELLS

Why do we dig wells to get water?

1. First, discuss with the class the necessity for water. Let the pupils make out a list of all the uses that are made of water, and suggest anything that could take the place of it in any of these uses. They will soon

realize that water is the most necessary of the things we use as food.

Animals require it to drink, plants require it to grow, man requires it to drink, to clean himself, his clothing and his home. Steam-engines use it to generate steam, and almost all manufacturing establishments require it in some of their operations.

2. Next, discuss the sources of water and the defects of each source.

Rain water is unpleasant to taste, not very healthful, not clear, difficult to store, and often fails for a long time. In winter snow would have to be melted, which would take much fuel.

The water of creeks or rivers often is not pure enough for man to drink, is too far away from most of the houses, and is likely to fail in the dry weather.

Spring water is excellent, cool, clear, clean; but springs are usually so few that they are generally not available.

Wells can usually be dug at every house, and they will supply water which is clean, cool, and pleasant to taste. But they sometimes go dry.

The pupils examine a well, to find out its depth, diameter, the depth of water, and the effect of heavy rains on the amount of water in the well. They will find that some wells are bored to great depths; others are made by driving down a pipe pointed at the end and having holes along the side; others are dug.

The pupils will read the *Public School Geography*, page 29, and explain why water is obtained by digging wells.

WOOL

1. Have each pupil bring a piece of loose woollen cloth to school, or the teacher may supply each with a few

square inches. Let the pupils, by examining it, find that it is made of two sets of threads running at right angles, and that each thread passes alternately over and under the threads that are at right angles to it. Then have them examine a thread to find that it is made of short fibres twisted together, and that by twisting short fibres together a strong thread can be obtained. If a magnifying glass can be procured, let the pupils examine a thread, a fibre, and a piece of cloth under it.

2. The pupils next examine some wool as clipped from a sheep. Call their attention to the fact that it is made of hairs which are much crinkled and seem to cling together. They will contrast it with the hair of a dog or cat. Let them study pictures of the shearing of sheep and the packing in bales and shipment of wool.

3. Now describe the conditions suitable for the raising of sheep. (1) Usually the country is so dry that only a harsh vegetation covers it, for if the climate gives a rich pasture, cattle or crops are more profitable. (2) The people must have high qualities of intelligence, since the proper care, breeding, and shearing of sheep requires much skill.

4. The regions from which we get our wool should be located. For this purpose a map of the world should be hung up, and Canada should be pointed out to the class. Point out the places in Canada where sheep are raised extensively. Point out Australia, South Africa, and Argentina, and show how the raw wool comes from these to Canada to be made into cloth. Point out England on the map and teach the names Bradford and Leeds as the places from which our best woollens come. Describe how some of this raw wool is shipped to Canada packed in great bales, and point out the places in Canada where woollen cloth is made.

5. Have the pupils find at home the names of different kinds of woollen cloth and the uses of each. Ask the store-keeper for the labels taken from webs of woollen cloth, and let the pupils gather all the information they can from them. In this way they will find what kinds of woollen cloth are made in Canada and what kinds are made in England.

6. As seat work let them write the story of a woollen dress.

These two examples will suffice to show how these topics should be taught to the Second Form.

TRADE

In order that the pupils may get a proper view of the processes of modern trade and industry, it is a good plan to teach a lesson on the following problem:

Why is it necessary for goods to be bought and sold?

1. The teacher should tell the pupils how the early settlers in Canada lived: They grew their own food, made their own clothes from cloth woven by themselves, and built their own houses either out of logs or from lumber sawed by themselves from the logs that they felled in their own forests. There were scarcely any stores at which things could be bought. Tell the class that in many parts of the world there are still no stores. Give as an example, the Eskimo, who generally gets his food, clothing, building material, fuel, and ornaments almost entirely from one animal, the seal. The question naturally arises—Why does not each family in Canada still produce all that it requires?

2. Examine the work done in the home. Each has his or her own part of the work to do. One cooks, one makes the beds, one milks, one tends the animals, and

one or more does the work in the fields. What are the advantages of such a method? Each learns to do one special duty more quickly and efficiently. Thus the whole work of the house is done better, in less time, and with less work for all concerned.

3. Examine the work of the community. Each pupil will make a list of the articles that his parents sell to the people of the community and a list of the articles made in the community that they buy.

How is one man able to persuade a second to let him have what the second man produces? This is the origin of trade. What advantage is it to trade rather than to make all that one requires? What people in the community do not produce any goods, but assist in carrying on trade?

4. Each pupil will make a list of the more important articles, not made in the neighbourhood, that his parents buy. Where do they get those articles? Where does the store-keeper get them? How do the people get the money to pay for them? Teach the pupils the meaning of exports and imports in relation to the village or community in which they live. Show them the value of the store-keeper to the community. In the same way show them the value of the division of labour in building a house.

MARKETING

A good deal has already been taught on local marketing, but it will be well to discuss in detail the chief methods of marketing:

1. Much is sold directly by one farmer to another.
2. The farmer may sell his produce, such as butter and eggs, to the local store-keeper or trade it for groceries, cloth, and other goods.

3. Produce men go through the country and buy poultry, butter, eggs, fruit, grain, and cattle.

4. The farmers have customers in the towns and cities to whom they ship on the railway, or they carry the produce to the customers in their own cars or wagons. They sometimes go to the local market also.

5. The farmers may ship produce, stock, and grain to a big market in a city, where an agent sells it as profitably as possible.

6. The farmers unite and appoint their own agent to sell their commodities or to make their butter and cheese and sell them.

CONTINENTS, OCEANS

An exact definition of a continent cannot be given and should not be attempted. If it is defined as the great land masses into which the world is divided, then Europe and Asia should be considered as a single continent, but everybody considers them two. Man has gradually separated the world into more or less arbitrary divisions, partly by natural and partly by artificial boundaries. These divisions he calls continents. From time to time the boundaries between these are changed to suit man's convenience. For example, the State of Panama is now considered one of the Central American States and is a part of North America. Until 1903, when it gained its independence, it was a division of Colombia and a part of South America. Thus it is seen that the line of separation between continents is changeable.

The same is true in regard to the definition of an ocean. There are four oceans—the Atlantic, Pacific, Indian, and Arctic—and seven continents—North America, South America, Europe, Asia, Africa, Australia, and

Antarctica. Formerly a great body of water was supposed to surround the south pole just as the Arctic Ocean surrounds the north pole. This was called the Antarctic Ocean. Recent exploration has shown that this region is occupied by a continent, called Antarctica, and, consequently, there is no Antarctic Ocean, but the Atlantic, Pacific, and Indian Oceans are considered to extend to Antarctica.

The continents and oceans should be taught from a wall map of the world. Probably a map on Mercator's Projection is best for everything except a comparison of the relative sizes of the continents and oceans. In it the directions—north, south, east, west—are along straight lines. A few lessons, chiefly drill, should be taught on the map of the world before local products are discussed, because, when teaching these topics, it is necessary for the teacher to point out the countries to which the supplies of local products are shipped, and the countries from which our local imports come.

The teacher draws the attention of the pupils to the blue, representing water, and the other colour or colours representing land. He then shows them Canada and the part of it in which the school is situated. From there they start on a journey eastward, and at last reach the ocean. He gives them the name of North America as the continent in which Canada is situated. They cross the great body of water which is called the Atlantic Ocean, and come to Europe. Next they travel west from Ontario until the Pacific Ocean is reached. In a similar way, teach the names of the other continents and oceans.

A lesson should be taught on the character of the oceans—the salt water, the even temperature of the water, the currents, and the winds that blow over them.

The pupils should be taught that they are very deep and are inhabited by countless creatures. By means of imaginary journeys, teach a few of the characteristics of each ocean and continent. However, the important part of the work is constant short drills on the spelling and pronunciation of the names, the relative position of the oceans and the continents, and their relation to Canada. Every time it is necessary, in teaching local products, to mention the country to which they are shipped or the country from which they are imported, a drill on the continents and oceans through which the goods pass will do much to give the pupils a knowledge of these in a usable form.

CHILD LIFE IN OTHER LANDS

A thorough study of local geography teaches the pupils the relation of the people of their district to their environment, and shows them that in everything people do, both children and adults, they are greatly influenced by their surroundings. The kind of house they live in is determined by the climate, the seasonal change, and the habits of the people; the material of both house and furniture is partly determined by the products of the surrounding region; in some regions houses are chiefly of wood, in others of brick or stone. The fuel is determined by the same factors, some burn wood, others coal, oil, or gas. The food also depends largely on the local products and on those that can readily be imported. The work done by the parents is all dependent on environment.

The pupil, up to the present, has confined his work to the study of these factors in great detail. He has studied the little world in which he is living, and has probably not often paused to think that in this vast world there are

other regions in which conditions are very different. In teaching the countries from which our commodities come, some idea has been given of those regions. Now, at the end of the Second Form, the pupils should learn more fully of the distant parts of the world where other boys and girls live. This leads to the study of child life in other lands.

This should not merely be read about in books, but should be described and discussed in class. Indeed, the child life in other lands should be closely linked with the home life of the child. During the lesson on fruits, dates will be discussed, and the teacher will point out the part of the world from which they come. Then a lesson on the life of children in the desert, where the dates grow, will be taught, and the pupils will read extracts on child life in desert lands. In a similar way, when tea is discussed, life in India and Ceylon will be taught. The study of silk naturally leads to a description of the Japanese and the Chinese child.

THE ESKIMO

As an example, the Eskimo child will be taken.

The teacher should have the pupils make a list of all the commodities required by a Canadian child for food, clothing, shelter, fuel, ornaments, and playthings. The list will be quite long. Then the teacher tells the class that they are going to describe a child who, instead of having the use of many minerals, plants, and animals, gets almost everything from a single animal—the seal.

Show the class the picture of a seal, and describe its habits—it lives in water, catches fish, comes through holes in the ice, etc.

Next, describe how the Eskimo catches it and uses it. Describe the summer houses made of sealskins sewed together with the sinews of the animal and with one of its bones for a needle. The chief food of the people during both winter and summer is its flesh. Fish and reindeer moss are also used. Show pictures of the Eskimo children dressed in their sealskin clothing.

Describe the winter houses made of blocks of snow, and tell the class that these are heated by burning the fat of the seal. The children's playthings are composed of the teeth and bones of this very useful animal.

Show the class how the simple manner of life of the Eskimo is dependent on the geographical conditions that surround him. The weather on the land is so severe that scarcely any plants and no trees grow; therefore there is no wood, fruits, grains, or vegetables. The land produces scarcely anything. On the other hand, water, even in the winter, never sinks to low temperatures; there is an abundant vegetation in the sea, which serves as food for numerous fishes, and on these other animals, such as seal, walrus, and foxes, thrive. Therefore the people seek sustenance in the water.

Discuss with the class the long dark winter and the short summer with almost continuous sunlight. Explain to them how the rapid growth of plants in July is due to the continuous sunlight and the warmth of the sun.

Before the pupils are asked to read about the Eskimo people from the books in the library, certain definite information about them should be sought, to be searched for in the reading and studying of pictures in the books. For example, they might be asked to obtain the following information:

The Children—Size, shape of body, shape of face,

colour of face and hair; articles of clothing they wear; how their plays resemble and differ from those of children in Canada; what pet animals they have; how their parents travel on land and water; etc.

Last of all, as a project, the pupils and the teacher may build an Eskimo village, showing houses, sleighs, and boats.

CHAPTER XI

TOPICS OF THE COURSE

FORM III: JUNIOR

(The Course of Study, as issued in 1926 by The Department of Education, should be followed.)

By the time the pupils have completed the geography of the Second Form, they have had much practice in the observation of local geographic phenomena, in studying the industrial activities of the district, and in relating these to the lives of the people. They have also received hints from time to time of the great world outside; but as yet no attempt has been made to have them study systematically those great regions beyond their own neighbourhood, and relate their geography to the local district.

In reality the two are very similar, except that the outer world is on a much grander scale. After all, the local community is in many ways an epitome of the whole world, which is the reason why a thorough knowledge of the local district gained by observation is so indispensable, in order to understand the larger region, and why success in teaching the pupils the more distant regions of the world is dependent on their knowledge of the home region.

For the first time, the pupils are dealing with phenomena which they have never seen and with regions which they cannot visit. Every art and device must be used to give them a clear, graphic, and correct view of these great regions of the world. Concrete

material must be constantly used; pictures are needed, and word pictures must supplement and strengthen the visual aids. It has already been pointed out how visual aids should be used; but the graphic word picture is quite as useful, whether in the words of the teacher or read from a book. The map gives a skeleton view of a region and shows the broad, important relations, but leaves it in a sense still abstract and without local colour and detail; the picture shows the details of a very limited part; but the word picture supplements both by emphasizing the most graphic and important details.

Description is the key-note to the geography of the Third Form. Nevertheless, the parts of a picture should be described in their causal relations. A region may be described in several ways. It may be looked at as a whole, and the features common to all parts may be stressed; or it may be described in detail, beginning at one point and gradually moving from part to part in a regular order until the whole is covered. Children are more interested in details, though in many respects the general view is more important. However, both views must be stressed. It is during the work in this Form that the imaginary journey plays an important part. By taking the pupils on such journeys to the most characteristic parts and dwelling on the most important geographical details, pictures of the regions of the world can be given to them.

In the First and Second Forms local industries have been already taught. Now the different industries—hunting, fishing, lumbering, mining, agriculture, manufacturing, and transportation—are treated not merely as carried on in the local region, but also more generally in connection with Canada and other parts of the world.

MEN WHO LIVE BY HUNTING

This topic may be taken in the form of the following problem:

Where do our furs come from?

Each pupil may be asked to make a list of the different kinds of fur that the members of his family use, and to bring to school specimens, if possible.

At the next lesson each pupil examines a piece of fur to study its structure. He should see that it consists of: (1) The skin, (2) hairs of two kinds—long coarse hairs which form the outside of the fur, and short dense hairs which are hidden by the longer ones. Explain how these short dense hairs contain a layer of air which keeps the heat in and the cold out.

The names of all the kinds of fur known by the children are written on the black-board, the description and the use of the fur is discussed, and the pupils are tested until they can identify the different kinds. Next, the animals from which the different kinds of furs are obtained are described, and by means of pictures their appearance and habits are discussed, so that the methods of trapping will be better understood.

The furs are classified as those obtained from wild or from domesticated animals. The question naturally arises as to how man is able to outwit the wild fur-bearing animals.

Then proceed to solve the problem. Take the class on an imaginary trip through the wooded part of Northern Canada, as described in the *Public School Geography*, pages 11 to 14. By the use of pictures from the text-book and word pictures, describe the life of the trapper. In doing this weave into the description the fundamental facts about the surface, climate, rivers, vegetation, and

industry of Northern Canada. Give the pupils a graphic account of a Hudson's Bay Company post, showing that these posts are centres of activity throughout Northern Canada.

Teach the geographical conditions necessary for such an industry: (1) Great stretches of waste land, (2) a cold climate to produce fine fur, (3) means of transport, such as rivers and lakes, (4) varied conditions, as forests, open lands, rivers, and lakes, to make suitable habitats for the different fur-bearing animals. Also show that in a trapping region population will never be dense, as each trapper requires a large area to supply him with sufficient fur-bearing animals.

Point out the parts of the world in which hunting and trapping is the chief industry.

In conclusion, discuss what will happen to the trapping industry in the future. Some of the land will never be settled, and hence will always be a region for trappers. This is true of a large part of Northern Canada and Siberia. Fur farming is rapidly supplanting trapping as a means of providing a sufficient supply of furs.

This naturally leads to a lesson on fur farming.

MEN WHO LIVE BY FISHING

Each pupil will examine a salmon can at home, find the kind of salmon in the can, the character of the fish as revealed by the picture on the label, the place where it was canned, and the structure of the can. Let the pupils, by inquiry, make a list of the other fish that can be bought in the shops, and obtain information as to whether each is fresh, frozen, salted, dried, canned, or smoked, and where it is prepared, as indicated on the container. In this way the pupils can obtain a surprising

amount of information for themselves. Next, lead them to study all the pictures in the *Public School Geography* on fishing, such as those on pages 14, 15, 16, 45, 101, 102, 119. To these may be added others collected by the teacher and the pupils.

If there are any fishing operations carried on in the district, ask the pupils to observe the boats, how the nets are used, the kinds of fish, the cleaning, preserving, and shipping of the fish, and their destination.

Thus, before the topic has been formally discussed in class, the pupils have obtained much information by observation. Each should bring the material observed—cans, labels, pictures, etc., to the class, in order that all the material may be studied by the whole class. The subject can then be taken methodically.

1. Local fishing—Ask the pupils to tell about: The method by which they fish with rod and line, or otherwise; the fish caught, such as perch and sunfish; the seasons of fishing; and the tourists that are attracted to Canada during the summer in order to fish.

2. Fishing in the Great Lakes—Describe the kinds of fish caught, such as ciscoe (lake herring), whitefish, salmon-trout, pickerel, and pike. Next, take an imaginary trip in a tug to the lifting of the nets—the gill-nets, and the pound nets, or traps. Also describe the catching of ciscoes along the rivers by seines. The children will also be interested in hearing of the methods of catching them through holes cut in the ice.

3. Sea-fishing—This is described in the *Public School Geography*, pages 14-16. The chief fishing grounds both east and west of Canada should be shown on a physical map, in which the depths of the sea are shown by different shades of blue. The various methods of fishing, by means of traps, trawl-lines, and steam trawls, also the catching of

lobsters in traps are studied from pictures. The method of preparing and canning salmon and sardines (young herring), the smoking of haddock, the salting and drying of cod, the shipment of fresh mackerel, cod, haddock, and halibut in ice from the ocean to Ontario, should be described.

4. The life of the fisherman and his family—

- (1) He is skilful at sailing, and resourceful.
- (2) He lives humbly; the profits are usually small and uncertain.
- (3) There are great dangers; many fishermen are drowned at sea.
- (4) They usually live in small, isolated villages situated on inlets of the coast.

5. Conditions necessary for good fishing in the sea—

- (1) There must be an irregular coast with inlets for harbours.
- (2) As most fish are bottom feeders and depend ultimately on vegetation, the best fishing grounds are found where the sea bed is shallow, for only there does the light penetrate to the bottom. All sea vegetation depends on light.
- (3) Usually the waters are cool, because the vegetation is more luxuriant in cold than in warm water.
- (4) The people must be daring and not afraid of the sea.

MEN WHO LIVE BY LUMBERING AND MINING

These two topics should be treated after the manner of the two preceding.

Lumbering—In treating lumbering, direct each pupil to make a list of the woods that he knows, and their uses. Have the class find out the composition of

paper used in newspapers, artificial silk or rayon, linoleum, gramophone records, and other articles chiefly made of wood. Examine specimens of lumber made from the commoner kinds of wood. Let the pupils recall their visit to a saw-mill. (Chapter IV) Each class should visit any factories in the district which uses wood as the chief raw product. Then discuss with the class the methods by which the local farmers cut down their trees, draw them to the saw-mill, and have them cut into boards and scantling; also the method of cutting, piling, selling, and shipping cordwood. If any pulpwood is produced locally, the class should examine the chief processes by which it is prepared. See that they can identify all the woods in the schoolhouse.

Deal next with the method of lumbering, as described in the text-book. This work should be based as much as possible on information obtained by the pupils from a study of pictures.

Mining—The pupils will make a list of articles at home made of metal, and write after each the metal from which they are made. In class discuss the qualities of these metals and alloys, and show how these qualities make them suitable for the purposes for which they are used.

Take the class on an imaginary visit to a gold, a silver, or a nickel mine. The following subjects should be taught in connection with the visit to a gold mine:

1. The life of the prospector
2. Staking the claim
3. Exploring the claim
4. Sinking the shaft
5. Obtaining the mineral
6. Separation of the metal from the rock.

The pupils should be taught that mining, like other

industries, has to be carried on efficiently in order to be profitable, that few prospectors get rich quickly, that much money is required to develop a mine, and that the profits are about the same as from other industries.

HOW MAN OBTAINS FOOD FROM THE SOIL

1. Let each pupil either dig a hole in the garden or examine such a hole, and notice: (1) A top layer of loose soil coloured black, (2) a layer of more compact soil from which the black disappears as the depth increases, and (3) in some cases below this is the rock. Explain to the class that the black colour is due to the decaying of organic material, and that the upper layer is called the soil, the second layer the subsoil, and the rock beneath, bed-rock.

2. Let each pupil at home half fill a jam jar with good garden soil and pour in enough water to fill it. Shake the jar thoroughly for two minutes. Then let it stand until the next day. When the pupil examines the soil, he finds that it is coarse-grained at the bottom, and becomes finer and finer toward the top where it is a very fine mud. Pieces of roots and other organic matter float at the top.

The pupils next examine some soil under a magnifying-glass. They see that it is made up largely of little pieces of rock. Describe to the class the origin of soil. Show them a rock that has begun to crumble, and explain why it is crumbling.

3. The growth of plants is next taken. The pupils are taught that warmth, moisture, and good soil are the chief factors in the growth of plants, and these are of great geographical importance. Discuss how far man can control these in the local district. He has no control

over heat except in hotbeds and greenhouses, he can control moisture to a small extent by irrigation and watering, and he can more largely control the character of the soil by cultivation and by adding fertilizers.

4. Show that there are two ways in which man obtains the fruit of the soil: (1) By gathering the plant products that grow wild, and (2) by planting, cultivating, and harvesting crops on farms or plantations. The latter is called farming.

5. Describe the life of the people in the equatorial rainy forest region who live almost entirely upon the wild products of the woods, and describe some of the chief wild products, such as rubber, oil-palms, Brazil-nuts, dates, gum arabic, and many others. (*Public School Geography*, pages 22-24)

6. Describe, next, the agricultural processes of other parts of the world that differ from those of Ontario. In China, where the population is very dense and the farms are very small, cultivation is much more thorough than in Ontario, and the production per acre is very much greater. Show that such agricultural implements as we use would be quite unsuitable on such small farms. With our implements much land is wasted, and by hoe culture every square foot of land can be cultivated, as in China.

On the other hand, describe the methods of cultivation in backward and barbarous countries. There, because of lack of progress, the people use crude implements and do little cultivation. For example, in many parts of Spain, Russia, and the Balkan countries, bad cultivation leads to small production. Show that in Canada, where land is relatively cheap and labour dear, the production per man is high and per acre low; but in

Italy, Belgium, and China, where land is scarce and labour abundant, the production per man is small and per acre large.

Draw attention to the great differences between farming in the equatorial rainy forest region, such as Java, the Congo, the Amazon valleys, and in Canada. In those regions growth is so rank and rapid that it is very difficult to clear land, and the climate is so hot and humid that hard work is almost impossible.

RAW MATERIALS, MANUFACTURES, TRANSPORTATION, AND TRADE

1. Let each pupil make a list of ten of the most important manufactured articles in the home, and after each article write the raw materials from which it is made. The following are samples of what they should write:

Chair—wood, cane, glue, iron screws, varnish
Stove—iron, mica, fire-brick, porcelain.

The teacher will put lists of these on the black-board, and the pupils will classify the raw materials according as they are produced in Canada or in a foreign country, and whether they are products of the farm, forest, mine, or sea.

2. Let each pupil make a list of all the ways of transporting goods used in the district, and the advantages of each method. They will probably mention the following: (1) On people's backs, (2) on horses' backs, (3) in wheelbarrows, (4) in wagons and sleighs drawn by horses, (5) in automobiles, (6) on rivers, by floating, (7) in canoes and rowboats, (8) on steamers, (9) on railways.

3. Show the pupils the advantages of each method according to the geographical conditions.

4. Then discuss the methods of traffic used in other parts of the world, such as, by means of dogs, reindeer, camels, llamas, and asses. Show the suitability and necessity for the use of the different methods. On a map of the world drawn on the black-board, mark with coloured chalk the parts in which each method is predominant.

5. Let the pupils make a list of all the commodities that are made in the home, such as butter, cheese, clothes, stockings, bread, cake, soft soap; and a similar list of commodities that are made in local mills or factories, such as butter, cheese, lumber, staves, and flour. Discuss with the class why a creamery, cheese-factory, saw-mill, or other manufacturing establishment is in the district. In this way some of the factors that lead to the development of manufacturing, such as easily obtainable raw material, suitable transportation, and sufficient labour, are made clear.

Next, show the change that has come over manufacturing and is still taking place, namely, its transfer from the home to the factory. Formerly almost everything was made in the home, now the making of many of these things is being rapidly transferred to the factory. Even clothes, bread, cake, and butter are more and more made in large establishments and bought by the people. Discuss the advantages and disadvantages of this change. Show how this has led to the development of trade.

6. Describe a large manufacturing establishment and study with the class pictures of as many such establishments as can be obtained. Discuss more fully the factors necessary for manufacturing and point out the great manufacturing centres of the world.

THE EARTH AS A WHOLE—ITS FORM, ROTATION, POLES, EQUATOR

Already the pupils have studied the map of the world and have learned the continents and oceans, and in this grade they have to be taught the strange fact that the real earth that appears flat and has been represented on a flat map is, in reality, spherical. This can be accomplished only gradually and with considerable difficulty.

1. Tell the story of Magellan, who set out from Europe and sailed west until he came to America, then turned south around South America. His men continued westward, after he had been killed, until they reached the coast of Asia. Then with one ship—all that remained of their fleet—they still pushed west, and finally came back to their starting-point. Vasco da Gama, too, by sailing in the opposite direction and going south of Africa, was able to go from Europe to Asia.

Then show the pupils the globe, and trace the two voyages, and show that, if the earth is a sphere, one can reach China by sailing either east or west. Many thousands of people have travelled around the world by moving steadily eastward or westward over land and sea.

2. The pupils should observe the shape of the sky and the shape of the part of the earth which they can see. They notice that the sky is like a dome or lid that fits down on the visible part of the earth, and that the sky and earth meet in a circle, called the horizon. Tell them about the gradual disappearance of a ship beyond the horizon, and illustrate it with pictures. First the hull, then successively the deck, smoke-stack, and smoke, are lost to view.

3. Study the position of objects on a flat and on a curved surface. Let each pupil make a small plasticine ship and place it at one end of the desk, and let a small

piece of plasticine placed at the other end of the desk represent a fly. Direct the pupil to look at the ship from where the fly is and notice that he can see both the top and the bottom of the ship. Let him try placing the ship on a flat surface as far away as possible, and looking at it from the same level. In every case it is quite unlike the ship at sea.

Now have each take a globe—an apple or a pumpkin will do—and place the ship and the fly some distance apart on its surface. Then ask the pupils to look at the ship from the position of the fly. Gradually move the ship farther and farther away. The pupils notice that it disappears from sight just as did the real ship on the ocean. Thus bring it home to the pupils that the real surface acts as though it were curved like the surface of the apple.

4. Tell the pupils that for these and other reasons we believe that the earth is spherical, and show them the school globe that represents the earth. This should now be studied carefully, having the pupils first find Ontario. Drill them thoroughly on the relative positions of the continents and oceans on the globe. Let them trace journeys from Canada to the several continents, and the routes to Asia by going either north, south, east, or west. Compare the positions of the continents and oceans on the globe with their positions on the map of the world.

From this time on, the globe should be used with every region of the earth studied, and its position on the continent and its relation to other continents and oceans should always be studied on the globe first, while for its detailed study a map should be used.

5. The size of the earth should be taught next. Tell the pupils that Magellan's ship took three years to sail around the world, but that an aeroplane flying one

hundred miles an hour could encircle it in ten and one-half days. On the school globe the smallest speck of sand would represent the highest mountain and the thinnest layer of paint the deepest ocean.

6. Why the horizon is round—Place on the school globe a small piece of plasticine to represent a person. Have a pupil look over the top of the plasticine and mark the farthest part of the globe visible in various directions. The line joining these points makes a circle.

Repeat this observation, but put the plasticine representing the person on a mound of plasticine to represent a mountain. The horizon this time is also circular, but larger than the first. Explain, by means of this, why from a high piece of land we can see farther than from a low level.

7. The pupil will at once want to know why the earth appears flat, although its surface is curved. Place on the largest globe available a very small piece of plasticine to represent a person, and mark in his horizon as in (6). Cut a circle in a piece of cardboard the same size as the horizon, and place it on the globe, so that the only part of the globe exposed is the part seen by the person. It looks almost, if not perfectly, flat. But this piece of plasticine is relatively much larger than a man, so that if we had a globe very much larger than the one we are using, and a piece of plasticine the size of a small pin head, the part of the earth's surface bounded by the horizon would be so small that when viewed alone it would look perfectly flat.

8. Rotation of the earth—Have the pupils observe for several days the motions of the sun, moon, and stars in the sky. Direct each pupil to fix a lead-pencil in a piece of plasticine so that it is pointing directly at the sun; then examine its relation to the sun an hour after-

wards, and also two hours afterwards, in order to find which way the sun appears to move through the sky. Repeat this experiment, pointing the lead-pencil at a star and at the moon. Let it be repeated each day for a week. The pupils learn from this that the sun, moon, and stars appear to go across the sky from east to west.

The teacher now has to show the pupils that this motion is apparent, since the real motion is that of the earth on its axis.

Call attention to the fact that when a person in a train at rest watches another train alongside of it start to move, he thinks that it is his own train moving in the opposite direction. When a boat in a lake turns around quickly, a person looking from the cabin window thinks that it is the land around the shore of the lake that whirls in the opposite direction.

Thus there are two possible explanations of the movements of the sun, moon, and stars across the sky. Either they actually move, or the earth spins in the opposite direction. Tell the class that the latter is the true explanation. Demonstrate with the globe the direction in which it whirls. Have each pupil pass a hat-pin through an apple which represents the earth, and fasten the hat-pin vertically in a block of wood. Put a piece of plasticine on the apple to represent a person, and let a window represent the sun or a star. Turn the apple around on its axis and ask the pupils to observe the relative motion of the sun or star as viewed by the plasticine man on the apple.

9. Place pieces of plasticine on a large globe at several points between the pole and the equator, and let the pupils notice which moves most rapidly. One pupil will point out the part that does not move at all. Ask what that part corresponds to in the apple turning about on

the hat-pin. Tell them that the line about which the earth turns, corresponding to the hat-pin, is the axis, and that the points where this line reaches the surface are the poles—the one nearest Canada is the north pole and the other is the south pole. Teach the pupils the relationship of this point to the direction, north, which they have already learned. Drill thoroughly the directions on the globe, on a map of the hemispheres, and on a map of Canada which has the north pole on it.

Have a pupil lay a narrow strip of paper along a globe (preferably of slate) from one pole to the other, fold it in two to find its centre, place it from pole to pole again, and mark on the slate the point midway between the poles. Let several pupils mark this middle point, until they have marked it all around the globe. Then join the points by a circle. Tell the class that this line is the equator, giving the meaning of the word. Each pupil will mark the poles and the equator on an apple and cut it in two along the equator. State that the two corresponding parts of the earth are called the northern and the southern hemispheres. Using the globe and also a map of the world, drill the pupils regarding the relations of the continents and the oceans to the equator and the poles, by asking such questions as the following:

In which hemisphere is Canada? In what direction is the equator from Canada? What continents are chiefly in the northern hemisphere? In the southern hemisphere? Wholly in the southern hemisphere? Wholly in the northern hemisphere? Which two continents are cut by the equator? Which ocean is largely in the southern hemisphere? Which is wholly in the northern hemisphere?

Finally, tell the pupils that Magellan and Vasco da Gama, on their journeys south from Europe, came to

regions that were hotter and hotter, and that the sun, at first south of them at noon, came more and more nearly overhead. At last at noon it was right overhead, and the days and nights were very hot and of equal length. As they passed farther south, the sun was then to the north of them at noon, and it became cooler. The days and nights again became unequal in length. The change took place as they crossed the equator, or in the words of the sailor, as they "crossed the line." Often passengers celebrate the event of crossing the line. But of course there is no such line visible on the water or on the land. They know when they cross it only by the position of the sun or stars.

Tell the pupils, also, that when Admiral Peary discovered the north pole, he found nothing but a mass of ice over a deep sea, and that when Amundsen reached the south pole, he found the spot in a thick ice cap which rested on a continent. Each had to find the exact position of the pole by observing the sun and stars, for there was no mark of any kind to show where the poles were situated.

10. Up and down—Perhaps the most difficult conception to teach is that of up and down in relation to the spherical earth. Ask the pupils in what direction a stone falls. They say *down*. Let them show you that direction on the globe. They probably get it wrong, and will have to be told that it drops along a line that goes through the centre of the earth. Erect a match stuck in plasticine on the globe in a vertical position (that is, in line with the centre of the earth). Place it in Ontario, turn the globe around, and notice that it still points to the centre of the earth, and, therefore, is straight up. Let the pupils place little plasticine dolls in an erect position on different parts of the globe. Drill on this until the

pupils recognize the vertical position anywhere on the globe.

Then teach that *down* is toward the centre of the earth, and *up* is the opposite direction. Let the pupils show the directions that objects will fall at different parts of the earth. Put two of the dolls, one over Ontario and the other on the opposite side of the earth, and suppose each lets a ball fall to the earth. What direction does it fall in each case? In what direction is *down* in Ontario, as compared with *down* in the part of the earth opposite to Ontario? Why does the man on the other side of the earth not fall off? Make the pupils thoroughly understand that all bodies in all other parts of the earth are drawn toward the earth by their weight, just as we are drawn toward the centre of the earth by gravity.

CLIMATE AND LIFE

Ask the pupils to make a list of the different kinds of vegetation of the school-section, such as forest, meadow or common marsh, swamp, hill. Discuss with them the differences between the various regions. In a marsh there are no trees except perhaps some willows, and the whole surface is covered with grasses and sedges. There are few wide-leaved plants. The inference is that trees do not readily grow in soil that is too wet, and that willows grow in wetter soil than most other trees. In this way lead the class to see that the kind of vegetation depends upon soil, water, and heat.

Next, have each of the class make a list of the wild animals of the district, describe their surroundings, and give reasons why they live where they are found. The pupils should have some such list as the following:

The squirrel lives in the wood, because it can get

beechnuts, acorns, and seeds of cones. It also lives in towns, because it can get acorns and horse-chestnuts.

The muskrat lives in the marsh, because it is safer from enemies in the water and can get the fleshy roots of the waterlily and other water plants to eat.

The pupils thus see that most animals depend on plants, and, therefore, when they know the nature of the vegetation of a region, they will more easily understand the character of the animals.

For the vegetation belts, with the animals of each, the Course in the *Public School Geography* should be followed. If possible pictures of the savannahs, prairies, and the equatorial rainy forest should be furnished the pupils for seat examination. The teacher then by questions and descriptions works out the situation of the various belts. A vegetation map of the world will greatly help in clarifying the plant belts of the world.

CHAPTER XII

OUTLINE STUDY OF THE CONTINENTS

FORM III: JUNIOR (*Continued*)

THE first study of the continents should be made by the pupils from maps. A physical map should form the basis, and rainfall, temperature, and economic maps should also be studied. In the lesson plan on Europe in Chapter VI, a typical map exercise is given. Similar ones for the other continents should be prepared by the teacher. These should be worked by the pupils, individually, as seat work, before they are taken in class.

The lesson plan just referred to illustrates the method of treating a continent. Problems on each of the continents should be worked out partly by the pupils themselves from maps, pictures, and books, and partly in class. It will be fatal to the interest of the class to treat each continent in the same way. In the plan dealing with Europe, almost all the geography of the continent has been taken under one problem, but other continents might be dealt with under several problems.

NORTH AMERICA

North America may be treated under the following topics:

Why have the Old World peoples become distributed as they are in North America?

Why was the interior of North America settled through the St. Lawrence, rather than through the Mississippi?

Which formed the greater barrier to the settlement of North America, the Eastern or the Western highlands?

How has the distribution of heat and cold affected the settlement of North America?

What can be done to make the northern part of North America more habitable?

Why are the rains distributed so unequally over the Pacific coast of North America?

Why has the population become very dense in some parts of North America?

What parts of North America, still thinly settled, will some day support many people?

What are the natural regions into which North America can be divided?

Describe a trip from the Arctic Ocean to the Gulf of Mexico.

The animals of North America and their relation to the vegetation should be discussed.

Deal with the different ways in which the people of North America are governed.

What elements of geographical interest may be observed in a coasting trip from Prince Rupert to Montreal?

Other methods of dealing with continents are given in suggestions for lessons on Africa and Asia in the work for Form IV, Senior Grade.

CANADA

In this first course on the geography of Canada and its provinces, the teacher should endeavour to select topics that appeal to the pupil's interest and to gather the geography around these as centres. Many of these topics should take the form of problems. After these problems have been solved, the geography of the country

and of the provinces should be reviewed, by means of lessons in which the matter is collected logically around such topics as position, coast, surface, drainage, and climate.

It is better not to deal with each province separately; for in some cases it takes more than one province to make a natural unit. A great deal of what is said in teaching the geography of Manitoba will be repeated in dealing with Saskatchewan and Alberta. It is far wiser to deal with all the Maritime Provinces as one unit, and all the Prairie Provinces as another unit. British Columbia, Ontario, and Quebec should be taken separately.

The following are suggested topics under which the geography of the Dominion of Canada and the provinces may be taught.

CANADA

1. An aeroplane journey over Canada
2. The Hudson's Bay Company
3. Is it worth while developing the Hudson Bay Route?
4. The natural regions of Canada
5. Will Canada become the greatest mining country?
6. A canoe trip from Port Nelson to the Kicking Horse Pass
7. Is it a benefit to Canada that the inhabited part is long and narrow?
8. How will the deepening of the St. Lawrence River, so that large ocean steamers can pass through the Great Lakes, affect the industries of Canada?
9. A steamer trip from Port Arthur to Halifax
10. Why has the region along the Great Lakes and upper St. Lawrence River become the centre of manufacturing in Canada?
11. The different methods of transportation in Canada
12. The Canadian National Railways
13. Why have the Dominion and provincial governments set apart land for a large number of national and provincial parks, and spent large sums in maintaining them?
14. What effect would it have on Canada if the Rocky Mountains ran east-west instead of north-south?
15. A forest fire
16. A mining prospector
17. The ocean liner
18. The immigrant to Canada

BRITISH COLUMBIA

1. Why do trees grow so big in British Columbia, and what use is made of them?
2. Which are more valuable to British Columbia, its high peaks or its low passes?
3. The sockeye salmon
4. A trip down the Fraser River
5. Why has Vancouver grown so rapidly?
6. How are apples made to grow in the driest part of British Columbia—the Okanagan Valley?
7. The coal mines of Fernie

PRAIRIE PROVINCES

1. The story of a grain of wheat
2. The Prince of Wales's ranch
3. How the Rocky Mountains affect Alberta
4. Which will become the greater city, Winnipeg or Toronto?
5. The Bassano Dam
6. Wainwright National Park
7. The foreigners within our gates
8. The grain elevators
9. The tar sands of Northern Alberta
10. Which will be the larger city, Calgary or Edmonton?
11. The prairie township

ONTARIO

1. Why is the chief population of Ontario in the south-west peninsula?
2. A visit to the Hollinger Mine
3. Why has Toronto become a larger city than London?
4. Niagara Falls
5. What are the advantages of Ontario for new settlers?
6. The Ontario village
7. Ontario's canals
8. Cheese and butter-making in Ontario
9. What effect on farming have the Great Lakes?
10. The Soo Canal
11. A trip through Northern Ontario
12. Algonquin Park

QUEBEC

1. Which is going to be the greater city, Montreal or Vancouver?
2. Which has better facilities for manufacturing, Ontario or Quebec?
3. The French-Canadian habitant

4. Industries on the Saguenay
5. The Eastern Townships
6. Why has Montreal surpassed Quebec?
7. Making maple sugar
8. Lumbering in Northern Quebec
9. A visit to the Thedford asbestos mines
10. A trip across Labrador
11. Shawinigan Falls
12. The influence of the St. Lawrence River on the settlement of Quebec

MARITIME PROVINCES

1. The tides in the Bay of Fundy
2. Fishing on the Grand Banks
3. Why has manufacturing not developed in the Maritime Provinces?
4. Why have the Maritime Provinces not grown so rapidly as Ontario and Quebec?
5. The Annapolis Valley
6. What commodities should the Maritime Provinces supply to Ontario and Quebec?
7. Halifax and St. John as our winter ports
8. Fox farming
9. Sydney
10. A sail in a fishing schooner from Halifax to Brazil

NEWFOUNDLAND

1. The fishing village
2. The sealing fleet
3. Why has Newfoundland progressed so slowly?
4. A railway trip across the island

YUKON AND THE NORTH WEST TERRITORIES

1. The rush for gold in the Yukon
2. The lonely trapper
3. A trip down the Mackenzie River
4. Is it possible to have ranches of reindeer and musk oxen in Northern Canada?

It is quite impossible to discuss how each of these topics should be treated; indeed, it is quite certain that any one of them can be taught in a variety of ways, each of which may be excellent. All that is necessary is to treat a few examples.

A few general principles, however, may first be stated. The teaching of the geography of the region must always be the first consideration; and it is not enough to discuss many interesting details about these topics. Facts of climate, surface, drainage, industry, and above all, the life of the people, must be woven about these topics in a logical manner. The lessons must never be mere descriptive details, important as these are; causal relations are to be stressed as well.

The topics should be assigned some time before they are to be taken in class; and exercises bearing on the topic and preparatory to its discussion should be assigned to the pupils. These will consist of map and picture studies, assignment of topics to be read in the text-book and in other books, and, sometimes, assignment of observations to be made.

A TRIP DOWN THE FRASER RIVER

The teacher might introduce this lesson by telling the pupils that an explorer attempted to pass down this river in a canoe about one hundred years ago, and after thrilling adventures reached its mouth—but no man has ever dared to make the trip again.

If books containing a life of Simon Fraser are available, ask the pupils to read the account of his exploring journey down the river. But if suitable books are not in the school, the teacher will tell the story, and also the story of the discovery of gold in the Cariboo District in 1851.

Have all the class work the following exercise from the maps of Canada and British Columbia in the text-book, and from wall maps showing rainfall and temperature:

Trace carefully the course of the Fraser River. Where does it rise? Which way does it flow for the early part of

its course? What mountains are on each side of it during this part of its course? What course does it take across the interior plateau? What two mountain ranges does it cut through? What is the character of the surface of the land near its mouth? What railways follow the lower course of the river? What railway follows its middle course? What railways follow its upper course? Why do these railways follow the river valley? Study the amount of rainfall along the river valley. In which parts of the course are there dense forests? In which part is it arid?

CLASS LESSON

Warm clothing is necessary for the first part of the journey, as it is in the mountains where snow occurs even in August. Hob-nailed boots are needed in climbing over the rocks on the portages.

By questioning get from the pupils the character of the beginning of a river that rises in the mountains—a torrential stream, muddy water fed by glaciers on Mount Geikie, where it has its source. Walking is necessary, as no canoe could traverse such water. (Text-book, page 28)

The Yellowhead Pass—Describe its characteristics—a valley winding through the mountains, with a tributary of the Fraser River swinging from side to side along its bottom. Trace it back in the Pass to its beginning, where only a few rods away a branch of the Athabaska River starts through the Pass in the opposite direction. Discuss the term watershed with the class, and also point out that these rivers have eroded this low Pass through the mighty Rocky Mountains.

The Rocky Mountain Valley—The towering Rockies are on the right hand, and the bare Cariboo range on the

left. Describe Mount Robson, the highest peak in the Canadian Rockies, and the torrent of water rushing down fed by its glaciers. This valley has good farm lands which have been washed down from the mountains and are now being settled.

Describe the forests of large trees and the ugly gaps in these forests due to fires.

The turn around the north end of the Cariboo Mountains—Discuss why Prince George, situated at this point, should grow to importance.

The trip south-west across the Interior Plateau—

1. The river runs through deep canyons.
2. There are many rapids and waterfalls.
3. The country is rough and rugged, unfit for cultivation except in the river valleys.
4. To the south it becomes dry, trees are largely replaced by cactus and sage-brush, and the temperature is hot. Explain, as the cause of the dryness, that the Coast Range to the west has taken the moisture out of the air.

5. The salmon are seen passing up the river to enter the tributaries, in order to spawn.

6. Quesnel is a quiet little town, which, in the days of the Cariboo gold rush, had a population of ten thousand.

The canyon through the Coast Range—A headlong rush of waters, through which no canoe can pass; travelers tramp through it on foot and at last emerge at Lytton, where the Canadian National and the Canadian Pacific Railways reach the Fraser River.

The lower course—

1. A flat country totally different from the plateau.
2. It is really the delta of the river.
3. Fertile agricultural land, heavy rainfall, and splen-

did farms growing hay, small fruits, hops, tomatoes, cattle, and bees, are the characteristic features.

4. New Westminster, with its saw-mills and canneries, comes next.

5. The mouths of the river, with thousands of boats manned by Japanese fishermen catching salmon with gill-nets are at the end of the trip.

As a drill on the trip have one of the class describe the different surface features crossed during the trip—the Rockies, the Cariboo Mountains, the Interior Plateau, Coast Range, and Fraser Delta. Another pupil will describe the different climates, giving explanations of each. Another will explain the changes of vegetation, and still another will describe the possibilities for farming, lumbering, and mining in the different parts.

Have the pupils collect any pictures obtainable illustrating such a trip, arrange them in order, and let the pupils study the pictures to find additional information about the region through which the river passes.

THE FOREIGNERS WITHIN OUR GATES

One of the most urgent duties of the teacher is to teach the pupils about the new settlers in Canada in such a way that they may not think lightly of them; but rather, that they may try to understand the peculiarities of these newcomers and sympathize with them.

Preparatory Work: 1. Ask the pupils to make a list of the people in the district, their nationalities and occupations; also to find on the map the location of the country from which they came and the land and water they passed over in order to get to Canada.

2. A pupil will find from the *Canada Year Book* the nationality of the immigrants to Canada and the number

that have come during the last five years from each country. These facts will be written on the black-board, and the pupils will find the countries from which each came and the route taken in order to get to Canada.

3. Study pictures of the homes of new settlers in the Prairie Provinces and Northern Ontario, also pictures of the peoples themselves. Such pictures can be obtained in publications of the Canadian Railways, government departments, and the newspapers.

4. Class discussion:

(1) The homes these people left—They were very poor, land was scarce, and the people generally did not enjoy much liberty. They were ignorant, unable to speak English, and their mode of life was much below our standard.

(2) Why they left their homes—They came to Canada to improve their condition and because land was free or very cheap in Canada.

(3) The trip over—They saved money for the passage. Their life on the ship, the landing at Quebec, the inspection for disease, the trip across the continent to the Prairie Provinces, the colonial sleepers, cooking the meals, their feelings as they saw the vastness of Canada, are the topics to be discussed.

(4) Their first year—Building a sod house; buying a few hens, ducks, a cow, and two horses; ploughing the prairie land; their first crop; the children at school; learning to speak English; learning new habits of living were their first tasks.

(5) Their success in farming—A good frame house replaces the sod hut, good stables and poultry houses are built, they begin dressing like Canadians, the children become educated and are soon intelligent, progressive Canadians.

(6) Our duty to them—We should welcome them, remembering that our ways are strange to them, and try to understand them, in order that we may help them in every way to become patriotic citizens of their new country.

MAPS

As the number of pupils that have occasion to draw maps after they leave school is very small, the training in the drawing of maps is not primarily to give the pupils skill in this art. What is aimed at is rather to impress on them the size and shape of regions and the relative position of different places. Undoubtedly, the careful drawing of maps will be of assistance in impressing these facts on the mind. But careless drawing, resulting in the shape, size, and relative position being inaccurate, often does more harm than good, by giving wrong ideas of these features. To draw many maps carefully demands so much time that it is not wise to attempt it. Therefore the amount of map drawing demanded should be very limited, and whatever is attempted should be done well. One map each term is sufficient.

A far more valuable exercise is to mark various features on an outline map supplied by the teacher or traced by the pupil from a printed map. Marking railways, cities, rivers, mountains, products, types of vegetation, density of population, ocean currents, winds, and rainfall requires the most careful examination of the map and the relationship of its different parts. Coloured crayons, lead-pencil, and water-colours should be used to distinguish the different features.

For example, after a lesson has been taken on wheat production throughout the world, the pupils might be asked to mark in blue on an outline map of the world

the regions of great production, in red the regions where the consumption surpasses the production, and to draw lines from each region of surplus production to the parts of the world to which it is shipped.

MAP DRAWING

The best method of map drawing is by the block system. The map which is being copied is divided into a number of equal squares, or the blocks formed by the meridians and parallels of latitude will do, if these lines are not too difficult to draw. These construction lines are next reproduced on the drawing paper. The points where the outline cuts the construction lines are marked, and with these as a guide the outline is completed. Other details are added according to what is to be shown in the map. A very accurate map can be drawn in this way, and the pupil will be proud of his work; but the process takes much time, and only once a term should such a map be attempted.

If he makes the squares several times as large as on the printed copy, the pupil can construct a useful map of large size. By selecting such features as vegetation, productions, railways, temperature, and rainfall, and having each pupil represent one of these features on large maps the teacher will soon secure a fine series for the use of the class; and the training will be valuable to the pupils.

In elementary classes, to teach representation by maps, try the following. Begin with a drawing or plan of the teacher's desk or table. This may be done thus: Place the table so that two of its edges run north and south. Place a large sheet of paper on it. Mark the centre of the paper and the directions—north, south, east,

west. Now place several simple objects on the paper. Drill on the directions of these objects from the centre and from one another.

Next, remove the objects, one by one, and mark in each case the place where it stood, either by writing the name on the paper or by making a simple outline, or picture, of the object. Drill upon the direction of these pictures from one another. The pupils will, in this way, learn that the sheet of paper is really a plan of the table, and that such a plan is called a *map*.

Take the paper off the table and hang it on the north wall of the school-room. Continue the drill on the directions of this map. The pupils will soon learn that the top of the map represents the north; the bottom, the south; the right-hand side, the east; and the left-hand side, the west. Then the map may be hung on any wall.

After these relations have become fixed in their minds, require them to draw similar maps of their desks. They will readily see that it is impossible to draw all maps the full size of the objects. It is not advisable at this stage to trouble them with details of size and proportion. The important thing is that they learn what a map really is.

After drawing a plan, or map, of the desk, the pupils may attempt a map of the school-room. This should indicate the position of a few of the more prominent objects in the room, such as the stove, the teacher's desk, the door, etc. A map of the school grounds may be attempted next, followed later by maps of the section and of the township.

It is advisable that these maps should be hung at first upon the north wall. After the different positions and directions have been drilled upon, the maps may be hung upon the other walls.

Be sure that the pupils understand the meaning of every mark or sign on the map. Every such mark, or sign, is like a word used in a sentence. Behind every word there must be an idea; otherwise the sentence cannot express thought. Marks, or signs, on the map, like words in a sentence, are of no use unless they help to relate ideas.

SUPPLEMENTARY READING

Interesting books, descriptive of life in many lands, and well illustrated, are being published in large numbers by all the great publishing houses. There are many books suited to the reading capacity of each grade. If the teacher will make a wise selection and keep the school library well stocked with a supply of these books of travel and adventure in our own and foreign lands, the geography classes can be made more valuable by constant reference to interesting material found in certain books. The pupils will read these books eagerly, and will gather a great deal of useful geographical knowledge.

Supplementary reading is now looked upon as a most valuable aid in a liberal education; and all teachers are urged to make full use of it.

CHAPTER XIII

ONTARIO: CANADA: THE BRITISH EMPIRE

FORM III: SENIOR

THE detailed study of the Provinces might be taken up under such topics as the following, which are applicable to Ontario:

1. The situation with reference to the rest of Canada, the oceans and lakes, and the climate
2. The people and their occupations—
 - (1) Chief races
 - (2) Agriculture
 - (3) Fishing
 - (4) Mining
 - (5) Manufacturing
 - (6) The chief trade centres
3. The means of transportation—by rail and by water
4. The exports and the imports

Various topics may be discussed in detail, and about these topics much of the geography of Ontario may be woven. An example of one of these is given in full; namely, Niagara Falls.

Other topics of a similar nature are these:

1. Gold, silver, and nickel mining in Ontario
2. The usefulness of the St. Lawrence River
3. The Clay Belts of Ontario
4. The pulpwood industry
5. The manufacture of agricultural implements
6. The importance of Ontario as a furniture centre
7. Commercial fishing and fishing for sport in Ontario

8. The value of Muskoka and Algonquin Park to Ontario
9. The fruit districts of Ontario and their products

NIAGARA FALLS

Preparatory work: Let each pupil as seat work answer the following questions from a study of the frontispiece in the *Public School Geography* and from the map of Ontario:

What bodies of water does the Niagara River join? About how long is the river? How many waterfalls are there at Niagara Falls? What separates the two Falls? Which is the Canadian or Horseshoe Falls? What obscures it in the picture? What lies at the bottom of the American Falls? (The one to the left in the picture) What is the character of the land on each side of the river? What is the character of the river banks above the Falls? What is their character below the Falls? What name is given to such a river valley? What signs of rapids are there above the Falls? What is the nature of the current below the Falls?

Demonstration experiment: Have one of the boys make a toy wooden windmill. Make it turn by blowing on it. Fasten it to a nail, so that it is in a horizontal position and turn on a vertical pivot. Place an iron pipe above its centre, and pour water through the pipe. What effect has this on the windmill? Pour water from different heights and observe in what circumstances it turns most vigorously.

Presentation: With a map of the Western Peninsula of Ontario drawn on the black-board and a large wall map of the Niagara Peninsula, teach by questions and explanations the following facts:

1. The Falls—

(1) Two Falls, the Canadian and American, drop about 160 feet.

(2) The water below flows through a deep gorge and has many rapids, so that it drops another 160 feet between the foot of the Falls and Queenston. Thus the total drop in the river is over 320 feet.

2. Transport problems—

(1) A boat cannot pass the Falls.

(2) Welland Canal joins Lakes Erie and Ontario.

It has twenty-six locks, which give a drop of 326 feet. So many locks make traffic slow; and as the locks are short and the water in them shallow, large boats cannot use them. Large steamers have to unload wheat and other commodities at Port Colborne at the head of the canal, and it has to be again loaded into smaller boats to carry it to Montreal. The new Welland Canal now being built will have only six locks; and as these are very long and are deep, the largest ships will be able to pass through them.

Discuss the changes this will produce. On the map of the Niagara Peninsula show the canal, the route of the new canal, the position of Port Colborne, Port Dalhousie, Port Weller, Buffalo, and the Erie Canal.

(3) The deep gorge is spanned by two railway bridges—one for the Canadian National Railway, and another for the Michigan Central Railway. It is also crossed by two passenger bridges—an arch bridge near the cataract, and a suspension bridge at Queenston. If possible, pictures of these bridges should be shown, and the pupils may be taught the meaning of arch bridge (Canadian National and passenger bridge near the cataract), cantilever bridge (Michigan Central Bridge), and suspension bridge (at Queenston).

3. Scenic value—

(1) A greater volume of water passes over these Falls than over any other falls in the world.

(2) It is not so high or wide as the Victoria Falls on the Zambesi River in South Africa.

(3) There are beautiful parks on the American and the Canadian sides of the river.

(4) It is more readily accessible than any other great waterfall. Gorge route.

(5) It attracts many thousands of people from all over the world who spend much money in Canada.

4. Power development—

(1) How power is generated:

(a) Water from above the Falls is led by canal or tunnel into a vertical shaft, through which it drops to turn a turbine wheel at the bottom, very much as the water turned the windmill in the experiment.

(b) As the drop is 160 feet, the turbine is turned with great power.

(c) The shaft of the turbine is connected with a dynamo, which it turns, generating electricity.

(d) The electricity is carried by cables to many parts of Ontario, such as Windsor, Sarnia, Seaforth, Stratford, Guelph, Toronto, Oshawa, and intervening parts.

(2) Use of power:

(a) Lights houses and streets.

(b) Runs almost all machinery in factories.

(c) Runs milking machines and other farm machinery.

(3) Advantages for manufacturing:

(a) Cheaper than any other form of power.

(b) More convenient to use—no engine, boiler, fireman, or engineer, only a small motor that needs little attention.

(c) It can be distributed wherever needed.

(d) Its use is so flexible—it can run a carpet sweeper, a trolley, a large factory, or a locomotive.

5. Other large power developments in Ontario:

Sault Ste. Marie, Lake Nipigon, Fort William, Healey Falls, and Ottawa.

6. Effects on manufacturing:

(1) Ontario and Quebec have become great manufacturing centres.

(2) Cities and towns with electrical power are the chief manufacturing centres.

Seat Work: With the help of the text-book and geographical readers make a list of the chief manufacturing towns of Ontario, and measure on the map how far each is from Niagara Falls. Name the manufactured articles produced in each town.

The summaries of the treatment of topics already given will be sufficient to show how they should be taught. Each one becomes an interesting centre about which may be gathered many geographic facts of importance.

It is not intended that every topic in the preceding list shall be fully treated; but they are to be taken as suggestive. Teachers will think of many others that will more fully appeal to them as centres about which the facts of geography should be gathered.

THE MARITIME PROVINCES

This outline lesson follows the logical method of teaching geography. The nature of the surface explains

the drainage; and these, together with the climate, account for the vegetation and the industries.

Preparatory work: Before the class discussion the pupils should work out from wall maps and the maps in their text-books the geographical features, such as position in reference to the equator, the oceans, and the mountain ranges.

Then the following outline should be taken in class, the chief facts of which are obtained by questions on maps, pictures, and during class discussion:

Position—They are in the extreme east of Canada, bordering on the Atlantic Ocean, United States, and Quebec. The latitude is that of Lake Superior.

Extent—The three Maritime Provinces together are not so large as England. They are about one-fifth the size of Manitoba. Nova Scotia is smaller than Lake Huron, and New Brunswick is smaller than Lake Superior.

Coast—This is very irregular, owing to the fact that the coast has been sinking beneath the waters during very recent times. The chief coast waters are: Chaleur Bay between Quebec and New Brunswick, Northumberland Strait between Prince Edward Island on the north and Nova Scotia and New Brunswick on the south, and the Bay of Fundy between New Brunswick and Nova Scotia.

The coast line is extremely long because:

1. Prince Edward and Cape Breton are large islands, the mainland of Nova Scotia is almost an island, and New Brunswick is washed on three sides by water.

2. Besides the large inlets, the whole coast is an embroidery of capes, islands, and inlets.

This irregular coast is important in connection with the fishing industry.

1. The inlets make excellent harbours from which to go out to fish.

2. The inlets are excellent spawning grounds to attract the fish.

3. The inlets swarm with small fish, such as herring and squid, which are used for bait.

Fishing—

1. The continental shelf is very wide to the east of Nova Scotia and south of Newfoundland, providing for two kinds of fishing:

(1) Inshore, which is carried on so near the coast that fishing boats return with their catch each day. This kind of fishing is carried on everywhere on the coast.

The chief fish caught are cod, haddock, halibut, mackerel, herring, and lobster.

(2) Bank fishing. Schooners with ten to eighteen men go to the Banks south of Newfoundland, called the Grand Banks, and remain for weeks, until they have caught a complete cargo. They catch chiefly cod and halibut. Generally the fish are salted as they are caught, and dried when the ship returns to port. The dried fish are shipped to the West Indies, Brazil, Spain, and Italy.

Lunenburg is the chief port from which Bank fishers sail, and Halifax is the chief centre from which the fish are shipped.

Surface—

Generally low, only small parts in northern New Brunswick and northern Cape Breton are more than one thousand feet high.

Ridges run from south-west to north-east, as in the rest of the Appalachian Ridge.

Nova Scotia is generally rough and rocky; only the river valleys have extensive areas of fertile soil. Of these the Annapolis Valley is the most important.

The land bordering on both sides of the Bay of Fundy is rocky and precipitous.

New Brunswick has much more extensive areas of fertile land, especially along the St. John River.

Prince Edward Island is low, rolling, and fertile throughout.

Agriculture—

Chief agricultural districts:

1. Annapolis Valley and around Minas Basin. Products—apples, pears, hay, potatoes, cattle.

2. Valley of St. John River. Products—cattle, sheep, hay, potatoes, and apples.

3. Region surrounding Amherst, Truro, and Moncton. Products—cattle, dairy products, hay, and potatoes.

4. Prince Edward Island. Products—potatoes, hay, cattle, and foxes.

Drainage—

1. Since the ridges in Nova Scotia run in the direction of its length, the rivers run at right angles to the length of the peninsula. Therefore, they are short, swift, not navigable, and useful only for floating logs.

2. The St. John, the most notable river, rises in the State of Maine, flows diagonally across New Brunswick, and empties into the Bay of Fundy. The upper reaches of the river have many rapids and waterfalls as it cuts its way across the Appalachian Ridges, but it is navigable from Fredericton to the Reversible Falls at the mouth. The river widens here to form the harbour of St. John.

3. Many beautiful little lakes are scattered throughout New Brunswick and Nova Scotia as in Ontario.

4. Bras d'or Lakes, which are really an arm of the sea and contain salt water, occupy the centre of Cape Breton Island.

5. Since there is a heavy rainfall in the Maritime Provinces, there are many streams, so that in New Brunswick one can go anywhere in a canoe by making short portages. It is a sportsman's paradise.

Climate—

1. It is largely affected by the proximity to the Atlantic Ocean.

2. In winter the climate is milder than in Ontario, since the winds from the Atlantic Ocean are warming winds.

3. Springs are very late, as the winds from the cold Labrador Current make the air raw, damp, and foggy.

4. Summer and autumn are delightful. The ocean winds prevent the excessive heat often felt in Ontario.

5. Though the prevailing winds are from the west, it is the east winds blowing in from the Atlantic that bring rain and snow. The rainfall is greater than in Ontario, but the snowfall in southern Nova Scotia is light on account of the mild winters. In New Brunswick, however, the snows are very deep on account of the severe winters.

Vegetation—

The whole surface was originally covered with forest, but much has been cut and burnt. The lumbering industry in New Brunswick is still very important, and the town near the mouth of every stream has saw-mills. St. John, at the mouth of the largest river, the St. John, has very large saw-mills. Much timber is also found in the interior ridges of Nova Scotia. Prince Edward Island has been stripped of its forests.

Mining—

The same mountain formations are present as in the Appalachian Ranges of Pennsylvania and West Vir-

ginia. Accordingly, soft coal is the most important mineral. The chief mines are near Sydney, Glace Bay, and New Glasgow. Nova Scotia has stood first among the provinces for many years in coal mining, but during the last few years Alberta has become a keen rival. The chief difficulty is to market the product, as Ontario and Quebec are so far away. Gypsum and salt are also mined.

Manufacturing—

Advantages for manufacturing:

1. Raw materials are easily obtained by the sea ports, and manufactured goods are readily shipped.
2. Abundant coal is near at hand.
3. Inexhaustible supplies of iron ore are easily obtained from Newfoundland.

Disadvantages for manufacturing:

The home population is small, so that the local market is very limited, and manufactures depend largely on the local market in their early development.

2. These provinces are separated by a wide gap from the large populations of Ontario and Quebec; transport by railway is roundabout; and in the winter, water navigation is closed.

The chief manufactures are iron goods at Sydney and New Glasgow, and lumber at many of the towns near the mouths of rivers. Amherst and Moncton have various manufacturing establishments. Wooden ships are built at Lunenburg, St. John, and other coast towns. Formerly, the building of wooden ships was a very important industry; but the steel ship has driven it out to a great extent.

Transportation—

1. By water. The many inlets make excellent harbours.

St. John and Halifax are great seaports, and are open throughout the year. Their trade is greatly increased in the winter, when Montreal and Quebec are ice-bound.

Much coal is shipped by boat to the New England States and to Quebec.

2. By railway. The Canadian Pacific terminates at St. John. The Canadian National has two lines running through New Brunswick to Moncton. From there it continues to Halifax. A line also branches off at Truro and passes eastward to Sydney. There is a government railway throughout Prince Edward Island.

The people—

The population is about one million, half of whom are in Nova Scotia. They are chiefly British, with French in the part of New Brunswick adjoining Quebec.

THE BRITISH EMPIRE

Using a map study with the class the various great sections of the Empire:

1. In the eastern hemisphere
2. In the western hemisphere

Deal with interesting historical details in taking up India, South Africa, Australia, Canada, etc. Climate, races, industries, and products of each should be taught; and the trade routes uniting them to each other and to the British Isles should be clearly defined.

SUPPLEMENTARY READING

Supplementary reading should be systematically assigned throughout the year in connection with the lessons taught in the class. The pupils should be encouraged to give accounts of interesting things found in the geography reader or in other books which they have read.

CHAPTER XIV

THE BRITISH EMPIRE: THE UNITED STATES

FORM IV: JUNIOR

THE geography of the Fourth Form deals with various countries of the world and lends itself to the same kind of treatment as was given to the provinces of Canada in the Third Form. In this Form, however, the logical method of treating regions must not be neglected.

As the pupils in the Fourth Form have reached such a mental development that the study of cause is increasingly interesting and makes a strong appeal, the descriptive element becomes of less importance, and the causal relation of greater. The concrete appeals as strongly as ever to the pupils, and pictures, maps, observations, and experiments are still illustrative material with which they work in the solution of problems.

Latitude and Longitude have been dealt with already in Chapter VI.

A complete outline study of Europe in several lessons is found in Chapter VI.

THE BRITISH EMPIRE

A good method of dealing with the British Empire is to assign a different part of it to each pupil. The pupils are to study their regions with the purpose of telling the class the geography of the region assigned. Each may imagine that he comes from the part of the Empire which has been assigned to him. At a class recitation, each describes his part of the Empire so that that others can understand clearly its conditions. For

this purpose pictures and objects may be gathered, and by means of these, the text-book, and maps, the facts taught are made as graphic as possible. All the pupils are to have the privilege of asking questions.

As the descriptions proceed through a series of lessons, the teacher summarizes each region as it is taken and conducts thorough drills. If possible, after the subject has been completed, and on some special occasion, such as Empire Day, have a pageant of the British Empire, in which the pupils dress to represent the different parts, and let each give an address about the part which he represents.

DETAILS OF TOPICS

ENGLAND AND WALES

This region may be taught under the following topics:

1. Why has such a small country become so great?

Size of England compared with other countries; its unique situation; coal and iron together; navigable rivers; other facilities for shipping; fishing grounds; character of the people.

2. Why has London become the greatest city in the world?

London grew up in the heart of the agricultural part of England; a sea-port, though far in the interior; closely connected with other cities of England; convenient for the distribution of merchandise to central Europe; capital of a great Empire.

3. The estuaries

(Treated in detail below.)

4. The coal-fields of England and Wales

Location; chief cities; manufactures; importance of export of coal.

5. The making of cloth in England

Cloth making began in the north where sheep were reared; coal-fields near Lancashire and Yorkshire; cotton and woollen manufacture developed, chief cities for both, source of raw material;

ports at which landed, quality of textiles made, to what countries exported.

6. Why is Britain a land of sailors?

A long, narrow island with many inlets, names of chief inlets, good harbours, names of chief ports.

7. Whence do the people of Great Britain get their food?

Agriculture of Britain, large population engaged in manufacturing, need for import of food, chief food imports, countries of origin, routes, ports at which received, Britain's exports to pay for her food.

8. Review

SCOTLAND

1. A trip up the River Clyde

Coal-fields of Scotland; cause of growth of manufactures along the Clyde; Glasgow, its growth and industries.

2. The importance of Edinburgh

The Firth of Forth, scenic beauty; early history of Scotland; Edinburgh the early capital, its beauty, monuments, and industries.

3. The Scottish Highlands

Similarity of the Highlands to the Laurentian Highlands, roughness, beautiful lakes, sparse population, industries, Inverness.

4. Scotch tweed

The Southern Uplands, surface, sheep-raising, relations of such rivers as the Tweed to wool-washing and dyeing, woollen manufactures.

5. Review

IRELAND

1. The Irish peasants and agriculture

The small farms, poor drainage of the land, poverty of the peasants, surface of the country, chief farm products, exports to England, cities through which exports pass.

2. Why has Belfast outgrown Dublin?

Divisions of Ireland, Northern Ireland more progressive and wealthy; farm products, flax; Belfast, its linen and shipbuilding,

close to coal and iron of England. Dublin, the capital of Irish Free State, not so convenient to obtain coal and iron, people less progressive, hinterland poor.

3. Describe the trade between Great Britain and Ireland.

Contrast the industries of countries, Ireland agricultural, Britain industrial, one exports farm produce, the other manufactures; chief ports on Irish Sea, and imports and exports of each.

A LESSON: ESTUARIES

Preparatory work:

In the dictionary find the meaning of the word estuary. Find on the map the following rivers of Great Britain: Tyne, Tees, Ouse, Humber, Thames, Severn, Mersey, Forth, Clyde. From the scale on the map estimate the length of each of these. What is characteristic of the mouth of these rivers? How do they compare in size with such rivers as the Severn, Thames, and Grand, in Ontario? Name important port cities on each of these British rivers, and measure how far each is from the mouth of the river. Compare the use of the Severn, Thames, and Grand for navigation with the use of these rivers.

Compare the rainfall in Ontario with that of Great Britain? (See rainfall maps of North America and Europe in the *Public School Geography*.)

How do you account for the fact that British rivers are navigable by ocean vessels, while the rivers of Southern Ontario, which are just as long, can be reached only by the smallest steamers? Name the cities whose exports are shipped by means of each river. Read what the text-book says about each of the cities, and supplement this by reading in other books. State what kinds of goods are imported through these rivers. The pupils

will be asked to study all the pictures of British rivers that can be obtained.

Class Discussion:

Rainfall—Teach the class that the rainfall of Great Britain is far greater than that of Ontario, and especially in the highlands where these rivers have their source. Explain the cause of these rains; namely, the moist westerly winds being cooled as they ascend the slopes. Since these rains fall throughout the year, the British rivers are always full of water. In Ontario the distribution of rain throughout the year is uneven, and during the summer, when evaporation is greatest, there is very little rainfall, so that the rivers become very low when water is most needed for navigation.

Tides—Twice every day the tidal wave moves around Great Britain and rushes up and down the wide mouths of the rivers, scouring them clean and sweeping the sediment out to sea. Deltas or sand bars do not often block their courses, and they are always deep and navigable. The mouths of the rivers of Europe emptying into the Mediterranean Sea, where there are no tides, are blocked with deltas and bars, which greatly hinder navigation.

Shipping in the estuaries—As the estuaries penetrate far into the country, all parts are brought close to the sea, and this makes excellent shipping facilities.

1. These estuaries have helped Great Britain to become a great manufacturing country because, (1) raw material can be brought in cheaply, (2) the finished products can be exported cheaply, (3) coal and iron can be shipped in barges along the rivers and from one river to another by means of the canals that have been cut.

Show that the chief manufacturing centres are near the coal-fields.

2. They have assisted shipping. Great Britain is the greatest shipping country in the world. Raw products which are bulky are brought in. Manufactures which are of small bulk are exported, and export coal fills the rest of the space for the outward cargo. As ships have a full cargo both ways, rates are low.

3. They have helped fishing. (1) The fishing of Britain surpasses that of any other country. She is situated on the continental shelf, and the fishing grounds surround the island. (2) The numerous estuaries all around the coast form safe harbours from which to sail to the fishing grounds. (3) The chief fish caught are herring, cod, haddock, mackerel, pilchard, sardine, plaice, and sole.

4. They have helped to make the British great sailors. Great Britain and the British Empire's safety depend on her navy, and it is because fishing and shipping have trained a great number of expert sailors that she has been able at all times to maintain a strong navy.

Conclusion:

Thus we see that fishing, shipping, manufacturing, and Britain's maritime greatness are all intimately connected with the fact that the small rivers widen out into deep estuaries in which the largest ships can find anchorage.

A topical outline study of the United States might be based on the topics which follow.

THE UNITED STATES

1. What are the natural regions of the United States?
(Text-book, pp. 127-130)

2. Take an aeroplane trip over the country.

(Follow the plan of the aeroplane journey, pages 7-10, Text-book.)

3. Account for the wealth of the United States.

Area compared with other countries; varieties of climate; varieties of vegetation; arable areas and their productions; the vast mineral wealth; the water-powers; the qualities of the people.

4. Why has New York become such a large city?

The Atlantic coast and its harbours; the barrier of the Appalachian Mountains; the Mohawk Valley and Hudson River furnish the only gap; New York at the mouth of this gap; its trade.

5. Study of Pittsburgh, the centre of the steel trade

The coal-fields of the United States; Pennsylvania coal; the iron of Minnesota and Michigan; lake transport of iron ore to Lake Erie ports; shipment by rail to Pittsburgh; the processes of iron and steel making; the industries of Pittsburgh; the destination of the iron products.

6. The New England States

The Atlantic Coast; difference between the north and south; the harbours; the fishing grounds; the ports; Boston; lumbering; the centre of manufacturing due to an early start, water-power, handy raw materials, and the character of the people.

7. The cotton belt

The cotton plant; climatic requirements for growth; distribution in the United States; the picking of cotton; the negroes; the ginning, baling and export; the cotton ports—Galveston, New Orleans, Mobile.

8. A trip down the Mississippi

Trace the course of the Mississippi on the map of the United States; sources in Yellowstone Park and Minnesota; the ranching country of Montana and Wyoming; the wheat country of Dakota and Minnesota; St. Paul and Minneapolis; the corn and mixed farming region of Iowa, Illinois, and Missouri; tobacco of Tennessee and Kentucky; the delta plain, its cotton, rice, and sugar-cane; shipping on the river; the levees; New Orleans.

9. The greatest wheat-fields of the world

The soil and climatic requirements for wheat; spring and winter wheat; the spring wheat belt of Minnesota and the Dakotas; its relation to the wheat belt of the Prairie Provinces; the winter wheat districts of Nebraska, Kansas, Washington, and California; why little American wheat is exported.

10. The cowboy

The climate of the region immediately east of the Rocky Mountains, the vegetation; why unsuitable for crop production;

the cattle and sheep ranches; the life of the cowboy; the disposal of the cattle and sheep.

11. Why do we get our winter fruits from California?

Names of fruits to be obtained in Canada in winter; those which are imported and those which are home-grown; the climate of California; the winter rains; the rainless valleys; irrigation from the Sierra Nevada Mountains; the varied crops; chief shipping points, Los Angeles and San Francisco.

12. The last timber stands of the United States

The forests of the eastern United States that have disappeared; two timber regions left, the south-eastern States and the Pacific Coast; relation of the latter to the timber of British Columbia; chief timbers of each region; the methods of logging; Seattle and Portland.

CHAPTER XV

TOPICS OF THE COURSE

FORM IV: SENIOR

THE principles of physical geography are taken in greater detail in this Form. Geography is a science; physical geography teaches its principles; and the study of regions is largely the application of these principles to particular regions. The pupils never get a proper grasp of geography so long as they consider each district or country as a separate unit unconnected in its geography with other regions. In that case the geography of every region would have to be learned independently.

In reality, the continents can be divided into natural regions, and similar natural regions are found in corresponding parts of each of the continents. For these similar regions the geography is largely the same. It is true one may be more fully developed by man than another, nevertheless, they have much in common and will become more and more alike as time passes. The western part of British Columbia is very similar to the southern part of Chile and the western side of the South Island in New Zealand. California is almost identical in its climate, vegetation, and productions with central Chile, the Mediterranean countries, the south-east part of Cape of Good Hope Province, and parts of Western and Southern Australia. The Amazon Valley is very similar to the valley of the Congo River, and the American Desert to the Sahara Desert. Central Canada is very similar to Central Russia and Siberia, just as Eastern Canada is to Manchuria and the eastern side of Tasmania.

The whole world could be covered in a similar manner. This similarity in geography is explained by the principles learned in the study of physical geography, which might fittingly be called general geography.

Therefore, in dealing with the geography of the Senior Fourth Form, the physical geography should be studied during the first part of the course, and the study of the countries afterward will give an excellent opportunity for the application of these principles to particular regions.

HOW THE SUN HEATS AND LIGHTS THE EARTH

Let the pupils watch a beam of sunlight come through a small opening in the window blind into a darkened room. They notice that it travels in a straight line.

Experiment I—Spread out in the sun a piece of black cloth and a piece of white cloth. After half an hour feel the two pieces. The black one is much hotter. Explain to the class that, when the sun's rays strike an object, they are either turned into heat or glance off into the air without heating the object. In the case of the white cloth most of the rays glance off, or are reflected; and in the case of the black cloth they are changed into heat, or absorbed.

Experiment II—During a day in winter when the snow is thawing, place side by side on the snow a piece of white and a piece of black cloth. At four o'clock examine the snow under each. It will be found that more of the snow under the black cloth has been melted than under the white cloth.

Experiment III—Pull down the blinds in the classroom and let the direct light enter through a square hole. Hold a screen so that the rays strike it perpendicularly,

and measure the size of the illuminated spot on the screen; then let the rays strike the screen slantingly, and again measure the illuminated part. By questioning lead the pupils to see that the same number of rays were received on the screen in both cases; but in the second case they were spread over a much larger surface than in the first. Therefore, if the screen were of black cloth, the heat would be spread over a larger area on the slanting screen and would not make it so warm. From this lead the pupils to see that, the more slanting the rays of the sun, the less intensely they heat the surface of the earth. Tell the class that the rays from the sun are all parallel.

Let each pupil represent the earth on December 21st, and June 21st, by two circles, one below the other on a sheet of foolscap. Of course each circle will be drawn of the same diameter. The lines on the foolscap represent the rays of light coming from the sun, and arrows are placed on them to indicate that the rays are coming toward the earth. Direct the class how to draw the axis of the earth. In December it slopes at an angle of $23\frac{1}{2}$ degrees to the left of the vertical; and in June it slopes $23\frac{1}{2}$ degrees to the right of the vertical. (See Text-book, page 37.) Mark the two poles and the equator.

Question the class as to the drawings. First draw their attention to the fact that, as the lines on the foolscap are equal distances apart, the space between each two represents the same number of rays. Mark the points at which the rays shine vertically at noon on December 21st and on June 21st. Draw the line representing the path of the vertical rays around the earth as it turns on its axis on these days. Give the class the names of these lines.

Mark the points on the earth from which in December and June the sun is seen on the horizon. As the

earth turns on its axis on those days, mark the lines around the earth at which the sun reaches the horizon. Give the pupils the names of these lines. Draw a line on each circle representing the earth, separating the illuminated from the dark half of the earth. Mark in red the part of the earth that never passes out of the sunlight as the earth turns on its axis on the 21st of December; also on June 21st. Mark in black the parts that never pass out of the darkness on each of these dates. Teach the pupils the names of the light zones. Emphasize the fact that these are light zones, and that heat zones do not closely correspond with them, since many agents besides the amount of the sun's rays received affect the temperature of a region.

Using a drawing on foolscap paper to represent the earth on the 21st of June, measure the length of that part of the circle that lies between each two lines on the foolscap representing the earth's rays from the equator to the pole. In measuring use a piece of wire that can be laid along the curve, and mark on it the place where each line cuts the earth from the equator to the pole.

Since the space between each pair of lines represents the same number of rays, in which part of the earth are they spread over the greater surface? Which part of the earth receives the more heat from the sun. Measure the distance on the circle between two lines that strike the earth in the latitude of Ontario in June and December. In which case are the sun's rays spread over the greater surface? Why is Ontario colder in winter than in summer? On which of the two dates is Ontario in the sunlight for more than twelve hours? For less than twelve hours? On what date would it be in the sunlight

for twelve hours? Give a second reason why Ontario is warmer in June than in December.

After the above facts have been discovered by the pupils from their drawings, illustrate them with the school globe. If the room can be darkened and a powerful lamp obtained to represent the sun, this phenomenon, so difficult to understand, will be made clearer. After the demonstration have the pupils study carefully the *Public School Geography*, pages 34 to 39.

Problem: Why do some countries have daylight saving time?

From an almanac find the time of the rising and setting of the sun on the fifteenth day of each month in Ontario. The following Table is for Toronto.

Month	Rising	Setting
January.....	7.50	5.6
February.....	7.18	5.47
March.....	6.32	6.23
April.....	5.37	7.
May.....	4.54	7.36
June.....	4.35	8.1
July.....	4.49	7.58
August.....	5.21	7.23
September.....	5.56	6.30
October.....	6.31	5.36
November.....	7.12	4.53
December.....	7.44	4.42

Work out the following exercise on these data:

How many hours and minutes of sunshine are there on each of the days? If a person rises at seven in the morning and retires at ten o'clock at night, how many hours of daylight and of darkness has he while he is up? If he rose at six o'clock in the morning instead of seven and retired at nine instead of ten, how many hours of daylight and of darkness does he have while he is up? During what months is the amount of daylight about the

same in each case? In what months does he have more daylight by rising earlier? By which time of rising will he save more coal-oil or electricity for lighting purposes? Which time of rising gives the longer daylight period for recreation in the evening? What are the disadvantages of rising an hour earlier and retiring an hour earlier? Why is it better to move the clock forward an hour than to rise at six o'clock instead of at seven o'clock?

TIME

This topic is taken very fully in the *Public School Geography*, pages 34-36.

THE ATMOSPHERE

The teacher should perform some simple experiments to illustrate the properties of the atmosphere.

Experiment—To prove that air exerts pressure. Fill a pickle bottle with water, press a piece of cardboard, just large enough to cover the mouth, down on it, and invert it carefully. The water does not run out. This shows that the air pressing on the cardboard balances the weight of the water pressing down on it. Next, turn the bottle full of water sideways, and the cardboard still adheres to it, showing that the air presses sideways also. Ask the pupils to repeat these experiments at home.

EXPERIMENTS ON MOISTURE IN THE AIR

Experiment I—Compare the weight of a towel when wet, with its weight when taken from the clothesline. Why was it heavy? Why is it light? What has become of the water?

Experiment II—On a sultry day in summer put a tin vessel of water in the front of the room and wipe the

outer surface dry. Examine it from time to time for an hour. At first a thin mist appears, the drops grow larger, and then they run together to form drops like dew.

Experiment III—On a winter day put a mixture of four parts of chopped ice and one part of salt in a tin vessel and let it stand in the classroom for an hour. From time to time examine the outer surface of the can and scratch it with the finger-nail. At first the bright tin becomes dim, then a thin coating forms, which when scratched is found to be frost. This gathers in a layer which becomes thicker and thicker.

Experiment IV—To illustrate the formation of a cloud, heat a dish of water on the stove until it is almost boiling, take it quickly to the window, and throw up the sash. A dense cloud forms above the dish. The hot air above the dish is saturated with water vapour, and when it is chilled at the window, some of the water vapour is condensed into a cloud.

WINDS

The best way in which to give the pupils a clear knowledge of the chief winds of the world is by having them work out the facts from wind maps. In order to do this a wall map showing the winds for winter and summer will be found useful. The map in the *Public School Geography*, page 41, which shows the winds for July, should be studied. Let the pupils answer such questions as the following:

What name is given to the region of no winds near the equator? In what direction do the winds immediately to the north of the doldrums blow in the Atlantic and Pacific Oceans? Immediately to the south of the doldrums? How far to the north and to the south do these winds extend? What are the names of these winds?

In what direction do the winds in the Indian Ocean, to the north of the equator, blow during winter? During summer? What name is given to these winds? In what direction do the winds north of Australia blow during the summer (December)? During the winter? What name is given to these winds? Between thirty and sixty degrees of north and south latitude what are the general directions of the winds? What names are given to these winds? In what part of the world are they more uniform?

The teacher should not make this a class exercise, but should write the questions on the black-board and let the pupils first answer them as a seat exercise, and only after this has been done should the class discussion of the winds of the world be taken. During this discussion the above questions should not be taken up one by one; but the pupils should be tested and drilled on what they have learned. For example, the teacher should ask a pupil to give a description of the trade-winds, and the pupil should be able to state the facts about these winds.

Cause of winds—A part of the earth becomes heated and causes the air above it also to be heated. Like every other substance, air warm or cold has weight and is drawn toward the earth by gravity. Warm air, however, rises; this occurs because it is pushed up by the cool surrounding air which exerts a greater pressure than the central mass of warm air. This cool air presses in from every side and forces the warm air up.

RAIN

Water-vapour is, as stated in the *Public School Geography*, water in the form of an invisible gas which is in the air everywhere. The cloud that comes from the kettle should not be called either steam or water-

vapour, but a cloud or mist. It is composed of little globules of liquid water suspended in the air. Steam is the invisible water gas that comes off from boiling water. Between the end of the spout of a boiling kettle and the beginning of the cloud there is a clear space. This is filled with steam which has not yet become mixed with the cooler air, and, hence, has not been condensed to form a cloud. A fog and a mist are similar, although generally the name fog is given to the denser mass of water dust. A cloud is exactly the same as a fog, except that the latter rests on the ground, while the former floats high in the air.

Cause of rain—The pupils should be taught that rain is produced only by the cooling of humid air. This cooling is brought about in three ways:

1. When there are strong ascending air currents, the air becomes cool by its own expansion as it ascends, and in time the water-vapour condenses, first to form clouds and then rain. All our thunderstorms are formed in this way. On hot days the heated air flows upward rapidly, to form dense, fleecy clouds, and if the flow upwards continues long enough, the condensation is heavy enough to produce a thunderstorm. All the equatorial rains in the doldrum belts are produced in this way.

2. When moist winds blow away from the equator, they are blowing from warmer to cooler regions, and as they advance they become chilled and produce rain. The westerlies are rain-producing winds for this reason. In Ontario our spring and autumn rains are brought by east and south-east winds that originate in the Gulf of Mexico and the Atlantic Ocean. Since they are moving away from the equator, they become cooler as they advance, and hence produce rain.

3. When moist winds strike mountains, they move

up their slopes, become cooler, and pour down torrents of rain. This is the cause of the very heavy rains on the coast of British Columbia.

FROST

Frost is not frozen dew. Dew is found in drops on grass and other objects, and occasionally these drops become frozen afterward, when they form hard lumps more nearly resembling hail than frost. The water particles in a cloud may be either liquid or solid, depending on the temperature at which the condensation takes place. When it takes place above 32 degrees, the particles are liquid globules, when below 32 degrees, as is usual in the winter, they are very small ice crystals. When the objects at the surface cool the adjacent air below 32 degrees before condensation takes place, the water-vapour becomes ice crystals, not water globules. These ice crystals are gradually built up on the surface into crystalline forms, which are called frost.

SNOW

For a similar reason, snow is not frozen rain. Common sense tells one that a raindrop, when frozen, does not in the least resemble a feathery snowflake. It more nearly resembles a small hailstone. Snow is always formed in clouds where the particles are ice crystals. As these unite to form larger crystals, they do so in a regular manner, the same as a crystal of rock candy is built up in a solution. When these crystals become too heavy to be borne up by the air currents, they fall as snow-flakes.

RAINFALL MAPS OF THE CONTINENTS

The text-book has rainfall maps of each of the continents, and these might be supplemented by wall maps.

Before the geography of each continent is taught in class, the pupils should be given a seat exercise on the rainfall map. To interpret this map properly, they should have before them also a physical map, and if possible one showing the distribution of rain during the summer and the winter. The wind maps of the world are also useful.

The following is a type exercise on North America:

South of thirty degrees north latitude which has the heavier rainfall, the east or the west coast? What are the prevailing winds in this district? What is the cause of the heavier rain on the east coast? In what latitude is there the least rainfall? Why? On which side of temperate North America is the rainfall heavier? What directions do the winds blow in this zone? What is the cause of the heavy rainfall on the west coast of British Columbia? What change is there in the rainfall as one advances from Florida to Alberta? From what direction do the rain-bearing winds in this region come? Explain why the rainfall is so slight in the interior of Mexico and in the American Basin. How does the precipitation (rainfall and snowfall) of Northern Canada compare with that of the Prairie Provinces? Compare the amount of snowfall in Northern Ontario with that in Northern Canada. Why is the precipitation so light in Northern Canada?

THE OCEAN AND ITS MOVEMENTS

Write on the black-board the following list of substances which are obtained from the sea: Ambergris, trepang, dulse, sepia, pearl, mother-of-pearl, coral, sperm-oil, whalebone. Have the pupils find out what each substance is, where it is found, and for what it is used.

This information is to be obtained from the dictionary and the encyclopædia.

Drill the class on the names, size, position, and importance of the different oceans.

Depth of the ocean—General information only is necessary. Show where the continental shelves are wide, as in the North Atlantic and North Pacific Oceans, and that it is in these regions that the most valuable fisheries are found.

Deep sea deposits—The pupils should learn that these are of three classes:

1. Muds, which are sediments washed down from the land by streams, are found along every coast, but do not extend more than a few hundred miles from the coast.

2. The oozes, which are composed of the shells of animals and plants that swim in the sea. These microscopic creatures as they die fall to the bottom, where they have been accumulating since the oceans began. They are found just beyond the muds and extend out to medium depths.

3. The red clays, which are more widespread than any others, cover the bottom in all the deepest parts of the ocean. Though animals and plants swim in the ocean over these red clays, there are none of their shells in the deposits, since they are decomposed at the great depths at which these clays are found. The clays are composed entirely of meteoric and volcanic dust, which has settled down in the water after being carried great distances through the air.

THE MOTIONS OF THE OCEAN

The motions of the ocean are three: Waves, tides, and currents.

WAVES

The only one of these of which the pupils have practical knowledge is waves. The class should be given an observation exercise on waves.

The following should be observed from time to time:

1. Under what conditions are there no waves on a body of water?
2. What is the relation between the size of the wave and the strength of the wind, the duration of the wind, and the reach of water over which the wind blows?
3. What change takes place in the shape of the wave as it moves towards a gradually shelving shore?
4. What motion of the pebbles on the beach is produced by waves?
5. What is the shape of the pebbles on the shore?
6. What is the effect of waves on a cliff?

After these observations have been made, all the phenomena observed should be explained in class, and their importance to man should also be emphasized.

TIDES

As probably none of the class have ever seen the tides, the phenomena of the coming in and going out of the tides must be described by the teacher in as graphic words as possible. Pictures such as that on page 100 of the *Public School Geography* will be of assistance.

The influence of the tides on man should be taught; this is the most important part of the subject. Their effects on harbours, in producing dangerous currents, and in raising and lowering ships at the wharves, should be explained. Next, their value in keeping clear of sediment the estuaries should be described. (See Chapter II.)

CURRENTS

Examine the map on page 48 in your text-book, and after studying the courses of the currents as indicated in it, answer the following questions:

In what direction does the current flow in the equatorial part of the Atlantic Ocean? What name is given to this current? What happens to this current when it strikes the coast of South America? Trace the north branch of it to the Gulf of Mexico. What course does this branch take in the Gulf of Mexico? Where does it leave the Gulf of Mexico? What current flows between Africa and the West Indies? As the current already described leaves the Gulf of Mexico, what other current joins it? What name is given to the current formed by the union? Trace the course of this latter current. What current flows across the North Atlantic Ocean? Name its two divisions. Trace the northern division. What current flows east of Greenland? Where does this current go after reaching the south point of Greenland? What current flows south in Davis Strait? Trace its course as far as you can. Which of the currents of the North Atlantic Ocean are warming currents? Which are cooling currents? What large region of the North Atlantic Ocean has no currents? What name is given to this region? Trace the direction of the currents around this region. Find similar whirls of water in the South Atlantic Ocean and in the Indian Ocean.

CLIMATE

The method of teaching the relationship of the latitude to climate has already been shown, in discussing how the sun lights and heats the earth. Other factors affecting climate will now be discussed.

ALTITUDE AND CLIMATE

When a bicycle tire is being pumped full, the air passing from the pump to the tire becomes warm. When the air is allowed to escape from a tire, on the other hand, it becomes cool. Indeed, whenever a gas expands, it becomes cooler and loses heat, and whenever it is compressed, it becomes warmer. The cooling of expanding air is not due to it giving up heat to any other body. It is cooled because part of its energy is used to expand it.

When hot air is pushed up, it begins to expand on account of the diminished pressure, and this continues as long as the current continues to rise. It loses a degree for every two hundred feet. Thus air that is warm at the surface of the earth may be below freezing when at an altitude of two miles. It is this cold air surrounding the upper parts of mountains that makes them so cold that the snow never melts on their peaks.

The effect of winds, ocean currents, and surface features on climate can best be taught by wall maps showing these features. By comparing these maps with climate maps of the same region, the relationship can be worked out readily by the pupils.

POSITION . . SURFACE . . CHIEF CITIES

As the pupils are now more advanced, so that the logical appeals more strongly than ever before, the countries may be taught according to the logical method. Thus, they should be treated under the headings—position, size, coast, surface, drainage, climate, vegetation, industries, transportation, and people. Even in this grade, however, this order must never be slavishly followed, but must be varied for different countries.

Where the minerals are closely related to certain surface features, the mining industry should be taught in connection with the surface. Where transportation is largely dependent on certain drainage features, as in Ontario, water transportation is naturally taken in connection with this topic. Where manufacturing is determined chiefly by the position of the coal beds, the two should be connected in the teaching. Cities should not be left to the last and then be taught one after the other. They should rather be introduced in relation to the geographic conditions that have determined their growth.

Since the *Public School Geography* treats the different parts of the world after this plan, it is not necessary to follow out in detail the treatment of each region of the world. One example has been given in the work for Form III, Senior; Chapter X—The Maritime Provinces; and in it are indicated the place names to be taught.

AFRICA

The following is a suggested method of dealing with Africa:

Problem: Why was Africa, though so near to Europe, so late in being explored and settled?

1. *Causes of slow development:*

(1) Location—A large part of it in the torrid zone

(2) Climate—Excessively hot

Scarcity of rain makes great deserts north and south of the equator (Sahara and Kalahari).

The great heat and abundant rain near the equator makes unhealthy jungles difficult to penetrate.

The coasts are low and unhealthy, so that early explorers and settlers were repelled.

(3) Surface—There is a rim of mountains around

the coast of which the Atlas Mountains in the north-west form a part. These make the country difficult to penetrate.

The interior is a plateau depressed towards the central regions, which adds greatly to the dryness of the country.

The coastal plain is very narrow and is backed by mountains forming a steep escarpment.

(4) Coast—The shape of the continent being compact, and the coast without any break, harbours are few; hence explorers found it difficult to land on the coast of the continent.

(5) Rivers—Name the four chief rivers. As these tumble over the escarpment to the coastal plain, they produce rapids and waterfalls in their lower courses. Hence, explorers and settlers found great difficulty in penetrating the interior.

(6) Character of the natives—

Most of them were of a very low type and savage; and though unable to develop the continent themselves, they resisted civilization.

Even the Egyptians and the civilized nations of North Africa are unprogressive.

2. *Contrast with North America:*

Though discovered long after Africa, North America has developed much more rapidly.

The climate is more suitable for the white races.

The interior was easily penetrated by means of the St. Lawrence and Mississippi Rivers.

The coast-line is much more irregular and has many good harbours.

The cooler climate makes the country more healthy. The native Indians are of a high type.

3. *From the time Africa was settled by the Europeans, development has been much more rapid.*

Why Europeans took possession of Africa:

(1) The modern development of the steamboat made Africa far more accessible.

(2) There was a great struggle among European nations for trade during the nineteenth century.

(3) The desire for new sources of raw products for manufacturing led to the settlement of new regions.

Name some of the chief raw products and locate where these are found. (Wool, cotton, oil, nuts, rubber, mahogany, cocoa, dates, gum-arabic, fruits)

(4) For the increasing population of Europe new areas were required.

The British and Dutch settled in South Africa.

The Germans took possession of East and West Africa.

The Portuguese settled in East and West Africa.

The French and Italians took possession of the parts across the Mediterranean Sea from their countries.

4. *The results of European occupation:*

Most of the country is under the control of Britain, France, Portugal, Italy, and Spain.

There are three independent countries—Egypt, Abyssinia, and Liberia.

(1) Large cities have grown up—Cairo, Alexandria, Cape Town, Kimberley, Johannesburg, Pretoria, Khartum.

(2) The mother countries have been of great service to the colonies—

(a) They have built many railways.

(b) They have improved the government.

(c) They have taught the natives to farm and carry on other kinds of work.

(d) The natives have been educated and, to some extent, Christianized.

(3) The colonies have been of great service to the mother countries—

(a) They are markets for home manufactures.

(b) They supply raw materials for manufacturing. Wool comes from South Africa; cotton from Egypt, East Africa, Rhodesia, South Africa; gold and diamonds from South Africa; sisal and oil nuts from West and East Africa.

Contrast the present conditions with those before the European countries took possession of Africa.

ANOTHER SUGGESTED TREATMENT

Africa might be treated in an entirely different way. A series of trips might be taken, and the geographical features observed on each described. For example, the following could easily be made to cover the geography of the continent:

1. A trip down the Nile from Victoria Nyanza to Alexandria.

2. A caravan trip across the Sahara Desert, from Morocco to Timbuktu.

3. A trip across Central Africa, from the mouth of the Congo River to Zanzibar.

4. A trip from Cape Town to Victoria Nyanza.

During each trip descriptions should be given of the surface, rainfall, temperature, vegetation, wild animals, the people and their industries, and the cities passed. After these trips have been discussed, and a correlation of the facts has been made, a review should be held, in

which the geography of the continent might be gathered under the headings—position, shape, size, coast, surface, drainage, etc.

ASIA

A very good way to deal with Asia is to look at it as the continent of giants. Deal in turn with the giant plateaus, giant plains, giant rivers, giant river deltas, its highest mountains, its lowest plains, and its giant population. It has the severest cold, and the greatest heat, the most dreaded desert, and the densest forest jungles.

The following problems on Asia might be discussed:

Why has Europe surpassed Asia in civilization?

Why is more than half of the world's population found in Asia?

Why is the monsoon region the most densely populated in the world?

Why has Eastern Asia a much denser population than Western Asia?

Why has Asia, at one time the most advanced continent, stood still?

OUTLINE LESSON: ASIA

An example of the method of treatment of such topics follows:

Preparatory work: By a study of pages 40 and 41 in the *Public School Geography*, find answers to the following questions:

When an area is hotter than the surrounding regions, what is the direction of the winds? When cooler, what is the direction of the winds?

From a study of a map showing the summer and winter temperatures of Asia, answer the following questions:

In the summer, which is hotter, Central Asia or the surrounding oceans? In which direction do the winds

blow? In winter, which is colder, Central Asia or the surrounding oceans? Which way do the winds blow in winter?

By studying maps showing winds of the world, answer the following questions:

Which direction do the winds blow over India in summer? In winter? Which bring rain? On which side of the Himalaya Mountains are the rains heavier? Which winds are cool? In China and Japan what are the directions of the winds in summer and in winter? Which winds are drying and which produce rain? What winds blow over Northern Australia during the summer (January)? During the winter (July)? Which bring rain?

In the same way study the winds that blow over Sierra Leone and the adjoining countries, and over the Pacific Coast of Mexico and Central America? Let the pupils also study pictures of vegetation, tea-growing, and rice-growing of the monsoon countries.

Problem: Why is half of the population of the world in the monsoon region?

Class development: The following facts are developed and organized in class:

1. Monsoon regions—

- (1) India, south-east Asia, China, and Japan
- (2) Northern Australia
- (3) Sierra Leone and the adjoining parts of Africa
- (4) Coastal regions of Mexico, Central America, and Columbia adjoining the Pacific Ocean.

2. Climate—

- (1) In summer warm humid winds blow in from the ocean. Since they are moving away from the equator, they are rain-producing, and cause heavy

rainfall on the land especially on slopes, as, for example, on the south side of the Himalaya Mountains. They bring heavy summer rains to China, Japan, Sierra Leone, and Central America.

(2) In winter the winds blow from the land toward the water and are dry and cool. In all the monsoon countries this season is dry. As the monsoon countries are close to the tropics, the summers are very hot, and the winters are warm.

3. Vegetation—

(1) Summer is a period of luxuriant growth, as it is very hot, and the rains are very heavy. The natural vegetation is jungle or dense forest. Several crops can be harvested during the summer. Hence, this is one of the most productive parts of the world, and the food grown is sufficient to support a vast population.

(2) During the winter vegetation dries up and disappears, leaves fall from the trees, and animal life becomes dormant or hidden. This period has its advantages for a large population:

(a) Because vegetation withers and dies, the land is easily prepared for the spring crops, as there is no jungle to cut down.

(b) Since the people during the summer have to prepare for this season of no growth, it makes them work harder, and causes them to be provident; this develops intelligence and control.

(c) As the winter is warm enough for growth, if summer water is stored, crops similar to those of Canada can be grown during the winter. Irrigation develops skill, practice in co-operation, and experi-

ence in government; for men become dependent on storing water for the common good.

Summary: The advantages of monsoon countries should be stated, based on the facts dealt with. It will include summer and winter climate; irrigation; several crops per year; and variety of crops (wheat, barley, millet, soya beans, flax, rice, sugar-cane, tea, indigo, jute, poppy, corn, and tropical fruits); large amount of fruit grown; and type of man developed.

Conclusion: These features have produced a dense population in these regions.

UNION OF SOUTH AFRICA

1. The diamond mines of Kimberley

Description of a diamond, why it is so valuable; discovery of diamonds, method of mining; growth of Kimberley; cutting of diamonds at Antwerp and Amsterdam; other diamond fields of the world.

2. The Boer farmer

The veldt, surface, climate, natural vegetation; the Boer farmer; production of sheep and goats, the wool industry; Pretoria, the capital of the country.

3. The growth of Johannesburg

The gold mines of South Africa, comparison with those of other countries; methods of mining; growth of Johannesburg; many British attracted; the two races—British and Boers; the natives.

4. South Africa or Canada as a home for the immigrant

Compare the two countries as to chief industries, varieties of productions, nearness to markets, amounts and quality of available land.

5. Ostrich farming

Uses of feathers; kinds of birds whose feathers are collected—eider-duck, grebe, ornamental birds, and ostriches; habits of ostrich, character of country in which it lives as to climate and vegetation; the ostrich farm; Port Elizabeth.

INDIA AND CEYLON

1. Why is half the population of the world found in southern Asia?

Treated fully in this Chapter, page 213.

2. Why is India considered such an important dependency?

The immense size and population of India; the huge quantities of raw materials grown, such as wheat, rice, jute, indigo, tea, rubber, sugar, teak, and cattle; great exports to Britain of raw material; people wear cotton clothes which come chiefly from Lancashire; as wealth develops, trade, with such a vast population, becomes of great importance.

3. A trip up the Ganges River

Study the Ganges River from a map; description of delta as to climate and production; Calcutta, great level plain of Ganges, its productions and cities; the source of the river north of the Himalaya Mountains.

4. The rainfall of India

The three regions in respect to rainfall—(a) the desert of the north-west, (b) the region of monsoon rains, (c) Ceylon and adjoining parts of India with rain at all seasons; the relation of these rains to the winds; the contrast in vegetation, animal life, and industry during the wet and dry season; importance of the dry season in producing provident qualities in people.

5. Why has India so few large cities though the country is very populous?

India is agricultural, the chief agricultural products, people live in villages, manufactures are few, hence people do not live together generally in cities, manufactures in the homes, chief industrial cities—Calcutta and Bombay.

6. The peoples of India

Distribution of population, the peasant, poverty, religion, caste; the English and the improvements they have wrought.

WEST INDIES

1. Jamaica is a typical West Indian Island.

Treat this region under the usual headings of surface, climate, etc.

2. A sail from the Bermudas to Trinidad

On the trip describe the different groups—the Bahamas, Greater Antilles, Windward, and Leeward Islands, and tell the chief ways in which they differ from Jamaica, the typical island.

3. The origin of the West Indies

Difference between continental and volcanic islands; Bermudas and Bahamas, coral islands, their mode of formation; the Greater Antilles partly submerged mountain ranges; the volcanic islands, which include some of the Lesser Antilles.

4. Why Canada should trade with the West Indies

The chief British West Indies; their productions; what Canada can send them; what they can supply to Canada; advantages of trading within the Empire.

BOOKS OF REFERENCE

ELEMENTARY TEXT-BOOKS

- Canadian School Geography. G. A. Cornish. J. M. Dent & Sons, Toronto. 85 cents
- Essentials of Geography—Books I and II. A. P. Brigham & C. T. McFarlane. American Book Co., New York. Book I—\$1.40; Book II—\$1.96
- Junior Geography. A. J. Herbertson & O. J. R. Howarth. Oxford University Press, Toronto. 90 cents
- New Geography. A. E. Frye & I. Gammell. Ginn & Co., Boston. \$1.28

MORE ADVANCED TEXT-BOOKS

- Economic Geography. J. McFarlane. Sir Isaac Pitman & Sons, Toronto. \$1.80
- Pitman's Commercial Geography. Sir Isaac Pitman & Sons, Toronto. 4s. 6d.
- Principles of Human Geography. E. Huntington & S. W. Cushing. John Wiley & Son. \$3.00

YEAR BOOKS

- Canada Year Book. Edited by S. A. Cudmore. Issued annually by The Dominion Bureau of Statistics, Ottawa. Free
- Canadian Almanac. The Copp, Clark Co., Toronto. \$3.50
- Heaton's Annual, and Commercial Handbook of Canada. Issued annually. Heaton's Agency, 32 Church Street, Toronto. \$2.00
- Statesman's Year Book, The. Edited by Sir John Scott Keltie. Issued annually. The Macmillan Co. of Canada, Toronto. \$5.00

PHYSICAL GEOGRAPHY

- High School Physical Geography. George A. Cornish & David Whyte. T. Eaton Company, Toronto. 39 cents
- Introduction to Physical Geography. M. Newbigin. J. M. Dent & Sons, Toronto. \$1.25

BOOKS ON ONTARIO AND CANADA

- Canada, the Country of the Twentieth Century. Watson Griffin. 283 pages, 10 maps. Department of Trade and Commerce, Ottawa. \$1.00

Handbook of Ontario. Issued by the Ontario Department of Agriculture, Toronto. Free

Mines and Mineral Resources of Ontario. Issued by the Ontario Department of Mines, Toronto. Free

Pamphlets on Canada, Nova Scotia, Manitoba, etc. Issued by The Natural Resources Intelligence Branch, Department of the Interior, Ottawa. Free

Province of Quebec, The. J. C. Sutherland. Renouf Publishing Company, Montreal

Unexploited West, The. E. J. Chambers. Issued by The Department of the Interior, Ottawa. Free

BOOKS ON TEACHING GEOGRAPHY

Principles and Methods of Teaching Geography. F. L. Holtz. The Macmillan Co. of Canada, Toronto. \$1.75

Teaching Geography by Problems. E. E. Smith. Doubleday, Page & Co., New York. \$1.50

Teaching of Geography, The. A. Geikie. The Macmillan Co., of Canada, Toronto

Teaching of Geography in Elementary Schools, The. R. E. Dodge & C. B. Kirchwey. Rand, McNally & Co., Chicago. \$1.50

MISCELLANEOUS BOOKS

Longmans' Gazetteer of the World. Longmans, Green & Co., Toronto. \$14.00

Maps and Map Drawing. William A. Elderton. The Macmillan Co., of Canada, Toronto.

ATLASES

Advanced Atlas of Physical and Political Geography. J. C. Bartholomew. Oxford University Press, Toronto.

Atlas of Canada. Department of the Interior, Ottawa. \$3.00

Canadian School Atlas. J. M. Dent & Sons, Toronto. 90 cents

Royal Atlas of Canada. Thos. Nelson & Sons, Ltd., Toronto. \$1.00

MAPS AND PICTURES

Maps and Pictures of various kinds are published by George Philip & Son, London, England; W. & A. K. Johnston, Limited, Edinburgh; and G. W. Bacon & Company, London, England.

SUPPLEMENTARY READING

The following is a graded list of books that are suitable for supplementary reading in Geography. As many of these as possible should be in the school library.

FIRST AND JUNIOR SECOND FORMS

- A First Geography. C. A. E. Rodgers. Many illustrations in colour. Blackie & Son, Toronto. 45 cents
- A Little Book of the Far East. Ernest H. Robinson. Cassell & Co., Toronto. 15 cents
- A Little Book of the Far North. Ernest H. Robinson. Cassell & Co., Toronto. 15 cents
- A Little Book of Ships. Ernest H. Robinson. Cassell & Co., Toronto. 15 cents
- Arnold's Home and Abroad Reader—Book I, Book II. Arnold, London, England. 55 and 60 cents
- Children of Distant Lands. (Collins) Ryerson Press, Toronto. 45 cents
- Children of Europe. (Collins) Ryerson Press, Toronto. 45 cents
- Children of the World. Many Lands. Agnes Nightingale. A. & C. Black, London, England. 25 cents
- First Steps in Geography. Thos. Nelson & Sons, Toronto. 45 cents
- In Many Lands—Books I and II. G. Bell & Sons, London, England. 2s each
- Little Brown Girl, The; Pigtail Boy, The; Sunflower Girl, The; Banana Boy, The; Sheik's Daughter, The; etc. Oxford University Press, Toronto. 15 cents each
- Little Folks of Other Lands. Thos. Nelson & Sons, Toronto. 45 cents
- Little People Across the Sea. Oxford University Press, Toronto. 60 cents
- Many Lands and Their Children. Oxford University Press, & Toronto. 70 cents
- Men Who Work for Us. Oxford University Press, Toronto. 15 cents
- Pictorial Geographical Reader—Book I. Longmans, Green & Co. Toronto. 60 cents
- Sea and Land. Thos. Nelson & Sons, Toronto. 50 cents
- Sunny Islands of the South Seas; In Far Away Africa; At the Edge of the Desert; Our Island Cousin; The Far East; Mountain and Plain. The Macmillan Co., of Canada, Toronto. 12 cents each

- Two Black Babies; Two White Babies. Sir Isaac Pitman & Sons, Toronto. 16 cents each
 Way of Geography. (Collins) Ryerson Press, Toronto. 40 cents

SENIOR SECOND AND THIRD FORMS

- Children Far Away. George Philip & Son, London, England. 45 cents
 Homes Far Away. George Philip & Son, London, England. 45 cents
 Japanese Twins, The; Dutch Twins, The; Swiss Twins, The. Thomas Allen, Toronto. \$1.00 each
 Life in Our Own and Other Lands. (W. & R. Chambers) John Cooper, R.R. No. 4, Bolton, Ont. 50 cents
 Little Folks at Home and Abroad. 45 cents
 Little People Everywhere. Little, Brown & Co., Boston, Mass. 14 vols. 80 cents each
 Rambles Among Industries; Silk and the Silk Workers; Coal and the Miner; Wool and the Weaver; Paper and Printing. Blackie & Son, Toronto. 40 cents each

FOURTH FORM

- Around the World in the Sloop, *Spray*. Captain Joshua Slocum. Scribner's Sons, New York
 A Trip up the Nile. Eliot Warburton. Oxford University Press, Toronto. 30 cents
 Carpenter's Geography Readers—American Book Co., New York. North America, \$1.00. Europe, etc. \$1.00
 Far Afield. Longmans, Green & Co., Toronto. 75 cents
 The Travels of Noted Explorers. Cassell & Company, Toronto. India, Australia, Canada, South Africa, The Far East, New Zealand, and the Islands of the Pacific.
 In the Forests of Brazil. H. W. Bates. Oxford University Press, Toronto. 30 cents
 Native Races of Australia. Oxford University Press, Toronto. 20 cents
 Native Races of British North America. Oxford University Press, Toronto. 20 cents
 Native Races of British East Africa. Oxford University Press, Toronto. 20 cents
 Rambler Travel Books—Blackie & Son, Toronto. 40 cents each. British Isles; British Empire; Europe; Africa; Australia and Malaysia; Asia; Russia; The Americas. (Coloured illus.)
 Red Men and Buffalo. Oxford University Press, Toronto. 30 cents
 Staff of Life, The. J. M. Dent & Sons, Toronto.
 Travellers' Tales. Longmans, Green & Company, Toronto. 75 cents

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